

JPRS-EST-93-028  
3 September 1993



---

# ***JPRS Report***

# **Science & Technology**

---

***Europe/International  
Economic Competitiveness***

# Science & Technology

## Europe/International

### Economic Competitiveness

JPRS-EST-93-028

## CONTENTS

3 September 1993

### WEST EUROPE

#### SCIENCE & TECHNOLOGY POLICY

Germany: Five Max Planck Institutes Set Up in New German Laender [Bonn TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN, 30 Jun 93]	1
EC Project Promotes Use of New Technologies By SME's [Luxembourg INNOVATION PLUS TECHNOLOGY TRANSFER, Jun 93]	1
France: CEA Research Program Outlined [Paris AFP SCIENCES, 1 Jul 93]	2
Decline of Industrial Research in Eastern Germany	3
Eastern Germany Lags in Research [Guenther Ludvik; Berlin INGENIEUR DIGEST, No 7, Jul 93]	3
Policy for Research and Development Needed [Berlin INGENIEUR DIGEST, No 7, Jul 93]	4
Fraunhofer Institute Coordinates NEXUS Networking Program in EC [Berlin INGENIEUR DIGEST, No 7, Jul 93]	5
European Nuclear Firms Call for Long-Term Plan [Paris AFP SCIENCES, 15 Jul 93]	5
Ciba To Open Biotechnology R&D Center in France [Paris AFP SCIENCES, 15 Jul 93]	6
German Expert on Importance of Large Scale Research Institutes [Manfred Popp Interview; Stuttgart BILD DER WISSENSCHAFT, Aug 93]	6
Germany: Minister Boosts Industrial Research in New Laender [Munich SUEDEDEUTSCHE ZEITUNG, 16 Jul 93]	8
Germany: Dornier Requests More R&D Funds [Bonn DIE WELT, 27 Jul 93]	9
Telecommunications Minister on France Telecom Privatization [Paris INDUSTRIES, Jul-Aug 93]	9
Germany: 1994 Research Budget Estimated Insufficient [Munich SUEDEDEUTSCHE ZEITUNG, 6 Aug 93]	9

#### CORPORATE ALLIANCES

Siemens, Skoda Set Up Joint Venture [Eschborn NACHRICHTEN FUER AUSSENHANDEL, 23 Jul 93]	10
Germany: Takeover of IABG Defense Company Still Under Discussion [Bonn DIE WELT, 2 Aug 93]	10
Aerospatiale, Thomson Want Sextant, Allied Signal Alliance [Paris AFP, 25 Aug 93]	10

#### CORPORATE STRATEGIES

Airbus-Boeing Competition Assessed [Pierre-Louis Bernard; Paris SCIENCES ET AVENIR, Jun-Jul 93]	10
Bavarian Government Sells DASA Shares to Daimler [Bonn DIE WELT, 26 Jul 93]	13
East European Mobile Phone Systems Compared [Ian Channing; London MOBILE COMMUNICATIONS INTERNATIONAL, Summer 93]	14
VW's Piech on Productivity, Costs, Subcontractors, Management [Dr. Ferdinand Piech Interview; Duesseldorf HANDELSBLATT, 3 Aug 93]	16

#### EAST-WEST RELATIONS

Eureka Membership Promises 'Real Economic Benefits' [Aleksy Portanskiy; Moscow IZVESTIYA, 26 Jun 93]	21
Eureka Adopts New Projects, Admits Russia [Paris AFP SCIENCES, 1 Jul 93]	21
Belgium: Alcatel Acquires Shares of Russian Telecom Company [Eschborn NACHRICHTEN FUER AUSSENHANDEL, 30 Jun 93]	22
CNRS, Ukraine Sign Collaboration Treaty [Paris AFP SCIENCES, 1 Jul 93]	22

Fourth Franco-Russian Space Mission [Paris AFP SCIENCES, 1 Jul 93] .....	22
ESA Approves Nuclear Safety Aid to Eastern Europe [Paris AFP SCIENCES, 1 Jul 93] .....	23
Hispano-Suiza Contracts With Russian Aircraft Engine Maker [Paris LA LETTRE DU GIFAS, 1 Jul 93] .....	24
Bull Forms Software Engineering Group [Paris PRODUCTIQUE/AFFAIRS, 5 Jul 93] .....	24
French Astronaut on Board Russia's Mir [Paris AFP SCIENCES, 8 Jul 93] .....	24
Poland Inaugurates EUTELSAT Ground Station [Paris AFP SCIENCES, 8 Jul 93] .....	26
France, Russia Sign Nuclear Safety Accord [Paris AFP SCIENCES, 8 Jul 93] .....	26
EC Nuclear Safety Teams in Russia, Ukraine [Paris AFP SCIENCES, 8 Jul 93] .....	26
ESA, Russia Sign Joint Mission Agreement [Paris AFP SCIENCES, 15 Jul 93] .....	27
Siemens To Set Up Telecommunications Networks in CIS [Bonn DIE WELT, 21 Jul 93] .....	27
German Telekom To Set Up Fiber Optic Network in Russia [Eschborn NACHRICHTEN FUER AUSSENHANDEL, 23 Jul 93] .....	27
Franco-Russian Altair Mission Ends Successfully [Paris AFP SCIENCES, 22 Jul 93] .....	27
EUTELSAT To Increase CIS Coverage [Paris AFP SCIENCES, 22 Jul 93] .....	28

#### EUROPE-ASIA RELATIONS

Ericsson Signs Cellular Contracts With 12 PRC Provinces [London MOBILE COMMUNICATIONS INTERNATIONAL, Summer 93] .....	29
--	----

## SCIENCE & TECHNOLOGY POLICY

### Germany: Five Max Planck Institutes Set Up in New German Laender

BR2408081693 Bonn *TECHNOLOGIE-NACHRICHTEN*  
*MANAGEMENT-INFORMATIONEN in German*  
30 Jun 93 p 12

[Text] In establishing five new institutes in the new German laender, the Max Planck Society (MPG) is further contributing to the development of a uniform research environment. The new institutes may even be able to start work this year, or the beginning of next year at the latest, and will deal with the following priority research areas: The Max Planck Institute of Infection Biology is to undertake basic research into infectious diseases caused by bacteria, fungi, and protozoans, and to contribute to the establishment of this research area, previously only partially covered in Germany. By no later than early 1994, the institute could be operating from rented premises in the eastern part of Berlin. New premises near the Charite will be completed by 1998.

The Max Planck Institute of Molecular Plant Physiology will be located in Brandenburg in the Potsdam district—probably in Golm. It could start to operate from existing buildings there in 1994. New premises are to be built by 1998. The new institute will deal principally with research into biosynthesis processes and questions of distribution, transportation, and storage of plant contents and signalling agents.

Jena is the planned location for the Max Planck Institute of Economic Systems Research. The establishment of the institute in rented premises could start as early as Fall 1993. The land of Thuringia intends to provide funds for construction of the new premises and acquisition of the associated land. The institute's research topic will be the study of economic systems as regards transformation (change from a state planned economy to a market economy) and integration (economic systems in the uniting Europe).

The Free State of Saxony has proposed a location for the Max-Planck Institute of the Physics of Complex Systems in Dresden. It will provide premises rent-free until completion of the planned new premises on Dresden Technical University campus (1998). Work could start as early as the beginning of July 1993. Research at this theoretical physics institute will concentrate on non-linear, cross-linked systems. Such physical systems with complex non-linear dynamics are found, inter alia, in atmospheric and oceanic flows, in quantum optics, in the scatter of laser light on certain materials, and in many chemical reactions. They are characterized by irregular motions in time and space, with minor causes often having major effects.

The Max Planck Society is discussing with the land of Berlin the initially temporary and the ultimately permanent accommodation of the Max Planck Institute of the History of Science. Establishment of the new Max

Planck institute is linked to one of the seven humanities research areas set up in 1992 on the recommendation of the Scientific Council and supervised by the MPG subsidiary Funding Company for New Scientific Projects mbH. They were to concentrate on "the history and theory of science."

The institute is to deal with the history of fundamental scientific categories of thought, such as "experimentation," "causality," "rationality," "objectivity," etc., and of the interaction of the laws of thought expressed by these terms with the culture of the particular age.

### EC Project Promotes Use of New Technologies By SME's

BR1708141993 Luxembourg *INNOVATION PLUS*  
*TECHNOLOGY TRANSFER in English Jun 93 pp 8*

[Unattributed article: "MINT: Helping Companies To Manage the Integration of New Technologies"]

[Text] Managing the Integration of New Technology (MINT) is a new SPRINT [Strategic Program for Innovation and Technology Transfer] action, aimed at promoting the use of new technologies by small and medium-sized enterprises (SMEs) by using experienced consultants in the management of innovation. MINT is a co-ordinated attempt by the Member States and the Community to exchange good practice and share the results of a common approach in creating awareness and stimulating the use of innovation and technology management techniques.

MINT supports short diagnostic consultancy assignments undertaken by experts in the management of innovation as a door opener to introducing appropriate technological change as part of the individual business strategy. The scheme will provide firms with an assessment of their use of technology and the potential for integrating relevant new technology and management techniques (e.g. design, quality, value analysis), as part of overall business development.

Following a short diagnostic analysis of how the firm is, or could be, using and managing technology within the business, the consultant will assist the firm to develop a plan. As a part of the process, training workshops will be run for groups of firms with common business or technology needs. To ensure that there is follow through from the consultancy, MINT will co-operate with regional and national schemes, so that companies can be introduced to other relevant national and Community support programs.

MINT will be administered and operated in each Member State at national or regional level according to business practice in that specific Member State. This decentralised structure is an important and innovative feature of MINT. Sixteen experienced program contractors and sub-contractors have been chosen for this task, including ANVAR [National Agency for the Implementation of Research] and APRODI [Association for the

Promotion of Industrial Development] in France, VDI-IT [German Engineering Association], VDI-ZW and RKW [German Economy Rationalization Board] in Germany, ASTER [Agency for the Technological Development of Emilia-Romagna] and AIRI [Italian Association for Industrial Research] in Italy and PERA [Production Engineering Research Association] International in the UK. These bodies will be responsible for selecting, training and monitoring a core group of experts to carry out the individual consultancy assignments. In this way, MINT aims to deliver a common approach tailored to the specific requirements of SMEs in different national or regional business environments. The Commission will ensure harmonisation of procedures through the constant exchange of experience.

The co-ordination of this process at European level was launched at a seminar held in Luxembourg for MINT contractors on 24-25 March, which examined important issues about how to manage and operate the scheme. Substantial agreement was reached about the different steps involved in the scheme's implementation. Eligible companies in each country will be industrial firms with 50 to 250 employees with the resources and technical capacity to benefit significantly from the initiative. A combination of general diffusion and direct promotion will be used to identify target enterprises and there will be a formalised approach to selecting consultants and ensuring quality control.

SPRINT will ensure a standard procedure through a series of quality assurance workshops for the approved experts which will be administered nationally and monitored by the Commission. A Directory of the different technology audit tools and existing procedures which could be applied in the scheme is being compiled.

A second seminar is being planned for November after pilot phases have been undertaken and assessed in each country. About 1,000 consultancy assignments are planned for 1993.

For further information contact:

Mr Robin Miegé

DG XIII-D-4

Jean Monnet Building

L-2920 Luxembourg

Tel: 352/4301/34180, Fax: 352/4301/34544

or

Mr Jack Burgess

SPRINT Technical Assistance Unit

119 Avenue de la Faiencerie

L-1511 Luxembourg

Tel: 352/46 55 88, Fax: 352/46 55 50

### France: CEA Research Program Outlined

93WS0618D Paris AFP SCIENCES in French 1 Jul 93  
pp 1, 2

[Text] Paris—The Atomic Energy Commission (CEA) will focus on both nuclear energy research and basic research in physics and biology over the next few years.

Last Fall the government outlined the general sweep of the CEA's future programs and confirmed that its nuclear missions, both civilian and military, were primordial. The CEA's management has since translated those directions, starting with the civilian ones, into goals that the group's general administrator Philippe Rouvillois presented 1 July.

In the area of civilian nuclear power, the CEA thinks France should engage in research to maintain its lead. Studies will aim to boost industrial reliability, safety, and economic competitiveness, and reduce the volume and activity of waste.

Results of research on the preproject for the European Reactor, or EFR, have been "positive," said Rouvillois, and the better part of CEA research will now focus on feasibility studies for a fast neutron reactor that consumes plutonium, or an incinerator for minor actinides.

In the area of fuels and uranium enrichment, the CEA's goals are twofold: to prepare the process that will replace gaseous diffusion, and to preserve capabilities for producing enriched uranium over the long term. It will do this by developing the process based on Laser Isotope Separation into Atomic Vapor (SILVA), which consumes much less energy than gaseous diffusion. The "technical-economic" feasibility of SILVA will be demonstrated in 1996-97.

The CEA will also concentrate its research efforts on immediate and longer-term waste storage through its SPIN program (Separation and Incineration of Long-Lived Components). SPIN's goal is to reduce the volume and activity of active and very active waste that cannot be stored permanently on the surface. One component of the program, PURETEX, should reduce the volume of waste at the La Hague factory by a factor of three in 2000.

The CEA, Rouvillois also stressed, has opted to advance research that is likely to help improve the safety of nuclear installations, nuclear material transport, and waste storage.

Research into the nature of matter—particle physics, nuclear physics, astrophysics, molecular structure and architecture—will be maintained and even stepped up. Another priority area for the CEA is health and biology. That will include studies on protecting humans from ionizing radiation—specifically radiobiology—and research on cell organization and functioning.



Mr. Rouvillois stressed that the CEA's analysis of its future goals had been facilitated by improved management (termed "neolithic" by the general administrator) at the agency. In particular, the CEA set up an analytical accounting system last year. It is now up to research unit heads to translate the new thinking into specific research goals that will include timetables, summaries, and required resources, particularly personnel. They will do this in the Fall. The "plan" covers a three-year period, which will be extended later to five.

After the "questions" raised in 1992, the CEA, says its general administrator, has now "clearly repositioned itself, both as a public research organization and strategic shareholder for the government."

### Decline of Industrial Research in Eastern Germany

#### Eastern Germany Lags in Research

93WS0620A Berlin *INGENIEUR DIGEST* in German  
No 7, Jul 93, pp 10-11

[Article by Guenther Ludvik: "Based on Quotas Instead of Competition"]

[Text] "Maintaining the eastern German companies' ability to innovate is an important precondition for the continued investment willingness of private investors," urges Johannes Nitsch. The deputy chairman of the Bundestag caucus of the CDU/CSU [Christian Democratic Union/Christian Social Union] is not alone in his warning. But the chances that this would result in a turnaround in the decline of research in the east are becoming increasingly slimmer.

In view of the decreasing subsidies, the struggle for money is more and more being conducted with the gloves off. After the Otto von Guericke e.V. working group of industrial research associations (AIF) had first garnered praise and recognition for its rapid involvement in the new laender and the high qualifications of its committees, it is now increasingly being criticized.

The accusation: From the point of view of eastern Germans, the integration process into general German industrial research through the AIF so far has not succeeded sufficiently. Despite the enormous need to catch up in R&D for small and medium-sized companies, in addition to the 99 western German research associations only three eastern German ones have been founded and accepted into the AIF. The latter now includes 102 research associations with 65 industrial institutes.

The association, founded in 1954, is responsible for joint industrial research by small and medium-sized businesses. It distributes public funding from the BMWI [Federal Ministry for Economics] and BMFT [Federal Ministry for Research and Development].

Here as well the researchers east of the Elbe make a poor showing. Compared to 1991 the BMWI's money for joint industrial research for 1993 was cut back to 92 percent

for the old laender and to 71 percent for the new laender. In 1992 a total of 480 R&D projects were supported with 70 million German marks [DM]. Of that, only DM16.5 million went to eastern research corporations for 137 R&D projects. A drop in the bucket for the thinned-out, innovation-needy eastern enterprises.

#### Deindustrialization in the New Laender

	Early 1990	End of 1992	End of 1993 (prognosis)
Industrial jobs kept	100 percent	33 percent	28 percent
R&D jobs	100 percent	20 percent	16 percent

Right now the AIF is reviewing additional applications from eastern German research associations. Others have already been rejected with the reference that these subject areas are already being worked on by existing research associations in the west. Disappointed applicants are of the opinion, however, that the approval to found new research associations should not be made dependent on competitive thinking but on the regulations. Behind the scenes they are suspicious of a mixture of decades-long routine, company interests imposed by way of the boards and the experts' corruption. Because of this the research was quota-based, cartellized and institutionalized, says one critic, who does not want to be named.

A representative example: eastern German textile research. Its establishments had submitted 21 R&D projects for 1994 in agreement with the General Textile board of curators. Through a clearing group from the research board of curators which was not legitimized according to AIF regulations, 57 percent of the eastern German applications were not passed on for evaluation.

The rejection rate for western German applications is only 28 percent. Members of this clearing group are representatives of large companies which cannot be counted among the industrial middle group, as well as representatives of competing institutes. No representative of the shrunken eastern German textile industry is among them.

For the Thuringen-Vogtland textile research institute the rejection of its R&D projects endangers its existence. Cutting back research at the Thuringian Institute for Textile and Synthetic Research, reg. assn. has the effect "of blocking the introduction of necessary innovations in eastern German industry and thus preventing the recovery or at least the assurance of the decimated employment level," fears institute head Dr. Horst Buerger, an engineer. The last 94 of the formerly approximately 1,800 active research members of the chemical fiber industry work at his institute.

#### BMW Funding for Joint Industrial Research (Million DM)

Year	1991	1992	1993
Old laender	200	200	170
New laender	70	70	50

The cartellization and quota system also trigger displeasure because the still existing R&D potential—albeit now only 10 percent of the 1989 level—was found to be good in the evaluation. An evaluation of western German textile institutes took place at constant potential and with increasing funds.

This nourishes the suspicion that the distribution of public funds to the research associations does not take place according to the needs for innovation by growth-oriented industries, but according to a historically developed quota system which is outdated.

Even less does it meet the requirements by eastern Germany. The collapse of industry is dramatic enough and research and development have been even harder hit. The east-west ratio for R&D employees has now reached the lowest level so far of 1:15.

This downturn continues: It is anticipated that of the remaining 15,000 jobs in industrial applied research at the beginning of the year, an additional 3,000 will be gone by the end of the year. Privatized companies expect that only 40 percent of the R&D potential will be left of the R&D potential from the time they were taken over until the middle of the year.

Everyone who knows the situation agrees: Deindustrialization and shrinking research capacities will make it considerably more difficult to locate new companies in entire regions. Especially strong labor forces are emigrating, and the collected knowledge of business management is being lost.

The disproportionate unemployment among industrial researchers can have fatal consequences. Their elimination from short-term profitability discussions endangers the companies' medium-term survival prospects, when new products and methods are missing.

In order to improve the options for an industrial future in the new laender, eastern German industrial researchers and businessmen finally want to be included in decision-making and evaluation processes.

The FRG must not remain an exclusive, western-oriented association state. A modest wish so far: Not a single eastern German is on the board of the Federal Association of German Industry (BDI), for example, in the Association of the Automobile Industry (VDA), in the Association of German Machine-Building Enterprises (VDMA). The Association of Chemical Industry (VCI), at least, has one among 16 board members.

### Policy for Research and Development Needed

93WS0620B Berlin *INGENIEUR DIGEST* No 7, Jul 93 p 11

[Unattributed: "What Is Needed"]

[Text]

#### 1. Market-Oriented Concepts

Industrial cores can only be maintained until a new medium-sized infrastructure utilizing specific location advantages has developed. This requires research establishments on a private economic basis, which create preconditions for it with a scientifically convincing, economically effective strategic concept demanded by the market.

#### 2. Reorganization of Industrial Research

The starting point should be an extensive, all-German stocktaking of the industrial research infrastructure with respect to the foreseeable (as well as politically desirable) industrial demand according to research achievements, with respect to existing and development-capable potentials, with respect to proven or obsolete financing, organizational and cooperation patterns. Government tasks:

- Increase R&D spending for modernization and for expanding the research infrastructure;
- Reintroduce a tax subsidy for R&D.

#### 3. Legal Structures

The Treuhand-Forschungs-GmbH [Trust Agency] structure is being rejected. Instead, concentration to industry-specific research fields or divisions in companies, innovative research corporations and institutes as registered associations.

#### 4. Real Estate Transfer

Maximum demand: Analogous with the proven ways in the old laender, allocation of real estate at the symbolic price of DM1. Minimal demand: Sale at the market price according to expert evaluation.

#### 5. Debt Relief

General relief of any debts or operating losses. Basic motto: A one-time debt is cheaper than financing unemployment compensation.

#### 6. Structural Adjustment Funds

For companies or private institutes in the new laender which have fewer than 500 employees, a one-time structural adjustment fund should be established. The financial need should be carried by the Trust Agency, the BfA [Federal Office for Labor] (one-time two-year rate for

unemployment money instead of ABM [job creation measure] financing) and the Federal Ministry of Finance (tax relief for five years).

#### 7. Basic Financing

In order to achieve the same conditions as in the old laender, the nonprofit institutes and private innovative enterprises need basic funding from the laender available at the beginning of the budget year. For institutes the rate should amount to 25-30 percent of the annual budget, for companies 10-15 percent—but only for those which maintain or create R&D jobs in the new laender.

#### 8. Optimization of R&D Support Programs

BMFT: Benefits for including research facilities in the new laender; temporary special regulations for 100-percent project financing. BMWI: Simplified application procedures, minimum project running time of two years. Laender support programs: Project support at 60 to 90 percent, if results are productively applied in the respective land.

#### 9. Interest Representation

Equal participation for establishments in the new laender in bids, representation of interests in the new laender in all associations, institutions and on expert panels.

#### 10. Support for Eastern European Research

BMWI and BMFT: Financing of project studies. Support for cooperation with Eastern European institutes/companies as well as of association projects, using EC support opportunities.

Source: "Workshop Industrial Research in the New Laender," Berlin, February 1993.

#### Fraunhofer Institute Coordinates NEXUS Networking Program in EC

93WS0621B Berlin *INGENIEUR DIGEST* in German No 7, Jul 93 p 20

[Unattributed article: "Nexus Coordinates MST in Europe"]

[Text] Leading industrial companies and institutes have founded a "network of excellence" (NEXUS). The purpose is to prepare European industry for the future world market in microsystems. The EC Commission funds the European network within the framework of the ESPRIT program. NEXUS is to coordinate all activities in Europe in the field of microsystem technology [MST]. The Fraunhofer Institute for Silicon Technology (ISiT) in Berlin functions as the coordinator.

"Since the technological problems to be solved are extraordinarily complex," the NEXUS coordinator at ISiT, Hans-Christian Petzold describes the need for cooperation, "no European country, much less a small industrial company, is capable of working out alone the entire palette of

technology which is needed for production of multifunctional microsystems." Only through multidisciplinary cooperation of all European microsystem technology laboratories can the existing know-how be converted into demanding industry products, he said.

"NEXUS was conceived by the initiators as a platform on which the key technology of microsystem technology can mature, so that we Europeans can keep up with competitors from the United States and Japan in this important market of the future," Petzold said.

The network is controlled by a coordinating committee consisting of representatives of industry and institutes. Even shortly after its inception 31 companies and 50 institutes from 14 European countries were participating—and the trend is growing.

Person to contact: Hans-Christian Petzold, tel. 030/82998-110, fax 030/82998-199, Fraunhofer-Institut fuer Siliziumtechnologie ISiT, Dillener Str. 53, 14199 Berlin.

#### European Nuclear Firms Call for Long-Term Plan

93WS0625C Paris *AFP SCIENCES* in French 15 Jul 93 p 16

[Text] Paris—Europe's nuclear industry is worried about the persistent lack of orders and about the absence—everywhere—of a real willingness to restore long-term energy policies. Such is the overall impression created by comments made 8 July at the close of the European Nuclear Society's (ENS) annual meeting in Paris.

During the meeting, nuclear plant builders and operators from 22 European countries switched on a sort of blinking light, warning in terms that were still quite diplomatic of the dangers of a continued wait-and-see drift. Collette Lewiner, acting president of the ENS until the end of the year, said that if governments have done nothing by next spring, the industry plans to sound a louder, official alarm. The response will enable it to analyze the situation at the big, quadrennial nuclear conference scheduled for October, 1994, in Lyon.

In substance, said participants, time is passing. In 20 years governments will have to begin replacing the oldest of the plants, which will then be 30 or 40 years old. And there is no time to lose, for it takes at least 10 years to build a new plant.

"We French and Germans have already made a great deal of progress on future reactor design by combining our experience. The type of reactor we have come up with could be proposed throughout Europe," said Pierre Bacher, Electricity of France's equipment division director.

Added Bacher, "The first construction sites" for this first new generation of "safer, more efficient" reactors "will have to open around 2000." "The longer-term goal is to prepare a new generation of fast-neutron reactors, both to meet energy needs and to regulate the flow of plutonium and minor actinides."



Faced with a "difficult situation" and a "flaccid market that is much more the result of doctrinal opposition than objective considerations," the nuclear industry is getting organized, stressed Jean-Claude Leny, CEO of Framatome. Company restructurings, alliances with foreign partners, rationalization efforts, and moves to concentrate resources may undermine motivation and destroy teams. They may also not be enough. "Barring steady investment in nuclear technology, we can wait for the recovery and will be ready to take an active part in it. But there must be an awareness that we have only a small amount of room to maneuver."

Jean Syrota, president of COGEMA, and Yannick d'Escaatha, assistant general administrator of the Atomic Energy Commission, made the same kinds of arguments in favor of nuclear power in their speeches. The former spoke about the need to retreat irradiated fuel, and the latter about research on managing radioactive waste.

All in all, beyond the technical and economic arguments, French, Swiss, Finnish, German, or other participants had this to say to politicians: Muster the courage to adopt clear positions and to devise long-term strategies to meet the energy needs of your fellow citizens. And quit flying without instruments, subject to pressure groups and fickle public opinion.

#### **Ciba To Open Biotechnology R&D Center in France**

93WS0626C Paris AFP SCIENCES in French 15 Jul 93 p 31

[Text] Colmar—The Swiss chemicals group Ciba announced 13 July that the Upper-Rhine prefecture had just authorized it to operate a biotechnology center in the town of Huningue (Upper Rhine). Huningue borders the Swiss city of Bale, Ciba's headquarters.

The prefecture granted the authorization in a 6 July decree, says the group, after the municipality of Huningue had issued a building permit. The fourth-largest pharmaceutical group in the world already has several factories employing about a thousand workers in Huningue.

The biotechnology center will house the industrial production facilities for an anticoagulating protein to treat cardiovascular disease. It will also include facilities for research and development on the production of new medications using genetic engineering.

Ciba originally planned to set up its center at its Bale headquarters. But it gave up the attempt in December, 1991, after hundreds of appeals filed by associations opposed to the project—notably World Nature Fund/WWF, and the Bale Appeal Against Genetic Engineering—caused endless delays.

Ciba has promised to work only on organisms in risk classes 1 and 2, considered to be at danger-four level using international standards.

The "Biotech" is expected to cost over 800 million French francs and will employ some 120 people, most of them researchers. Work should begin in the fall for a start-of-operation date scheduled for late 1995.

#### **German Expert on Importance of Large Scale Research Institutes**

93WS0648A Stuttgart BILD DER WISSENSCHAFT in German Aug 93 pp 90-91

[Interview with Manfred Popp, CEO of Karlsruhe Nuclear Research Center [KfK] by Wolfgang Hess; place and date not given: "Abolishing the Myth of Geniuses"]

[Text]

[Hess] You deplore the fact that large scale research still has not found the acceptance of other research facilities even after being in existence for 37 years. Obviously the managers of large scale research have done something wrong. You are now able to exercise some self-criticism, Dr. Popp.

[Popp] We probably have not made sufficiently clear the type of forward-looking operational methodology that is implicit in large scale research. I would even go so far as to state that if we did not have large scale research, then we would just have to invent it now.

[Hess] I am curious about your establishment.

[Popp] Unlike most research facilities we are able in the case of each large project to re-decide on our own what the shape of the organization should be. In this way we achieve a degree of interdisciplinary activity that other research groups can only dream about.

[Hess] University institutes could also be forced into interdisciplinary activity.

[Popp] But we are the only ones who have the managerial instruments to establish supra-institutional cooperation. Besides, we continually find that even at present university researchers are heavily inclined to work autonomously as far as possible.

[Hess] Large scale research facilities see themselves as instruments of government research planning. But there have been major setbacks in that. Earlier it was nuclear energy that was the ultimate wisdom, then for a while it seemed to be manned space travel.

[Popp] We have to avoid the mistake of wanting to shape the future in a specific way through research. Nor should it be claimed that, absent engineering that is still under development—as is the case of fast breeder reactors—the supply of energy can no longer be guaranteed. It should rather be the job of applied research to open up and expand future alternatives for action. Certainly, many of our major initiatives have faltered. Long term research is simply risky. On the other hand, we are still often living on old technologies that are exhausting easily attainable raw materials and produce waste materials

and pollutants. At the least we should bequeath our posterity some technical alternatives.

[Hess] Large scale research facilities derive 90 percent of their basic financing from the federal government and 10 percent from the respective federal state. What does the citizen, whose tax money this ultimately is, get for it from the KfK?

[Popp] He gets offers for futuristic technologies in the three decisive areas of the environment, energy and microsystems engineering.

[Hess] These areas are also represented elsewhere. Is large scale research really able to do more than other institutes?

[Popp] Let me respond by citing an example. In environmental engineering we are very heavily engaged in waste disposal. This is a field, however, that has been greatly neglected by technology, although politically it is extremely high-profile. By now we have been closing in on this problem for more than a decade. To really do a successful job, you need process engineers, chemists, material researchers and systems analysts. That requires a certain scale. The continuity of our employees may also be an advantage. For unlike the universities, our employees bring a high degree of experience to their job.

[Hess] That being the case it might just be worth considering dropping one or other institute foundation and integrating new research plans into large scale research.

[Popp] It is certainly reasonable first to use the existing institutions as intelligently as possible, even through cooperation. The continuity and resources of large scale research can be just as ideally supplemented with new blood from the universities as their long-term orientation can be with the economy's market focus. When I ponder future technology development demands, I see fewer and fewer opportunities for isolated specialists. Sustainable development to preserve the conditions necessary for life requires multidisciplinary cooperation. Therefore we should place facilities capable of such cooperation at the center of those kinds of research.

[Hess] Politicians always prefer coming up with something new instead of rounding off what is already there.

[Popp] It is easier to produce individual brilliance with something new. But that precisely indicates the rethinking process that we also need in science. We continue to be fascinated by the scientific achievement of an individual and by the myth of the scientific genius. Focusing on the tasks of the future, however, we have to place the problem at the center and not the elegance of the solution. We have to strive for another scientific icon in such cases, less brilliant, but more focused on getting the job done.

[Hess] One KfK focus that deviates from the original concentration on nuclear engineering is environmental,

and particularly, climate research. So, what internationally recognized findings have research efforts at your facility yielded?

[Popp] A significant contribution on the precursor substances of the ozone depletion over the Arctic. We owe those results essentially to the Michelson interferometer for passive atmospheric sensing [Mipas], that was developed at the KfK and that allows simultaneous measurement of nearly all trace gases in the atmosphere.

In climate research we are also working on meso-scale modeling, together with Switzerland and France. By means of that we can do very much better testing on the predictability of climate models than is globally possible.

[Hess] If your spectrometer is so unique then you must surely be getting licensing revenue from companies that serially produce the device.

[Popp] There is not such a big market for the ozone hole. We still are not registering any licensing revenue specifically for that device. But that is indeed the case in many other instances. We have licensing revenues in excess of DM8 million per year.

[Hess] They were once 14 million....

[Popp] ...if you include the licensing fees we got for the reprocessing of nuclear fuel. But even omitting that, we are very well off in that respect, compared with other large scale research facilities.

[Hess] I hear you have more licensing revenue than all others combined.

[Popp] I cannot gainsay that.

[Hess] For years now you have operated a coordination bureau for technology transfer that presently numbers eight designated employees. Is it worthwhile?

[Popp] The overall financial balance is positive. Still, technology transfer remains a side issue for many sectors. The primary job of large scale research resides in long term safeguarding of the future and that has nothing to do with technology transfer or licensing revenues. We need other forms of cooperation with industry here.

[Hess] Industry keeps its distance from large scale government research. The expression "not market ready" comes up often when developments offered by large scale facilities are assessed. Apparently large scale researchers lack a market focus. Should you not create programs that distinctly improve communication with the economy?

[Popp] We really do have too little exchange. But it turns out that the enormous prejudices you find everywhere against large scale research dwindle once anyone acquires an insight into our activity. Conversely, we think that it is precisely industry at present that often thinks too narrowly and therefore superficially condemns our attempt at results that are rather medium term.

[Hess] Given the present financial crunch, you must be suffering heartburn over the KfK.

[Popp] It is obvious to us, of course, that we will have to shrink in upcoming years. We want to demonstrate that even after a process of restructuring we are capable of performing high quality work. Getting there, however, does cause us some concern. The cuts are so drastic that we can hire only a few young scientists and will be able to tackle fresh research assignments mainly by shuffling of personnel. As it appears right now, perhaps 480 of the 3000 basically financed positions will be lost.

But we have demonstrated for a long time that we are flexible. A decade ago we were still 70 percent involved in nuclear engineering. It presently accounts for only 20 percent of our total research program.

[Hess] Still, you continue to call yourself a nuclear research center. Other large scale research facilities have reacted more quickly to the signs of the times and crossed nuclear research out of their names.

[Popp] We have already discussed this issue at length. We do not need to feel ashamed of our internationally recognized achievement in nuclear engineering. Nor do we wish to risk the reproach of juggling words. But just as soon as the old nuclear engineering facilities are detached from the research center—and we are striving for that—a new name will have to be discussed.

#### [Boxed item]

Since April, 1991, Manfred Popp has been the CEO for the KfK, which currently numbers 4000 employees and has a budget of DM650 million. Between 1972 and 1987 the nuclear physicist, who holds a Ph.D., worked in the Federal Research Ministry. After that he spent four years as an assistant deputy minister in the Hessian environmental ministry.

#### Germany: Minister Boosts Industrial Research in New Laender

BR1808131393 Munich SUEDEUTSCHE ZEITUNG in German 16 Jul 93 p 25

[Text] New Federal Research Minister Paul Krueger (CDU) [Christian Democratic Union] plans to collaborate with Federal Trade and Industry Minister Guenter Rexrodt (FDP) [Free Democratic Party] in supporting industrial research in the new laender. Presenting his "Prospects for Research and Technology Policy in Germany" yesterday, Krueger told the press that the federal government intends a new "Joint Initiative for Product Renewal" to support the rapid translation of key technologies into new products from eastern German firms. Although Krueger was clearly not satisfied with the size of the research budget planned for 1992, he stated that in view of the pressure to make savings it was "acceptable."

Paul Krueger, the Neubrandenburg politician who succeeded Matthias Wissmann as research minister two months ago, explained that the new joint initiative was

required by the inadequate international competitiveness of eastern German products. The restructuring of the economy had led to a collapse of industrial research in the new laender; though research and development (R&D) required a workforce of 70,000, only 25,000 were still available. Krueger intends to concentrate subsidies for companies into the key technologies of health research, biotechnology, information and environmental technology. The Trade and Industry Ministry will be responsible for subsidies for companies, with the Research Ministry looking after high tech developments.

Krueger hopes to tap the billions allocated to the EC Structural Fund for a "substantial proportion" of the finance, although he also intends to call on the Trust Agency to play its due part. Krueger, a former member of the Bundestag's Trust Agency Committee, was unusually critical of the Berlin agency, accusing it of having neglected to maintain the industrial research capacity of the companies under its control. Overall, Krueger feels that "massive tasks" still face the new laender in developing modern research and technology structures.

Krueger stated that in devising his political objectives he had drawn extensively on Wissmann's strategic goals; though he had wanted to put his own stamp on them, the pressure to achieve savings had made this difficult. At 9.47 billion German marks [DM], the draft research budget for 1994 is roughly equal to this year's figure of DM9.61 billion. Krueger felt that the size of the budget should enable the major priorities for safeguarding the future to be tackled "without significant cuts." He listed the main priorities as biotechnology (with a 2.3 percent increase in budget share), traffic and transport technology (+4), preventive health care (+3.3), ecology (+2.2), and climate research (+1.8). DM1.8 billion are earmarked for information technology. The total allocation for telecommunications, however, has been slightly reduced, owing to the steady increase in EC funding and the high level of R&D expenditure by [the German Post Office's] Telekom. Significant cuts are intended for power station technology, aviation and hypersonics research, marine technology, research to improve working conditions, and the protection of historic monuments. Basic scientific research and contributions under international commitments will also suffer reductions.

Krueger also plans cuts in German contributions to the European Space Agency (ESA). The federal government has empowered him to negotiate with Germany's partners a reduction in her DM1.17 billion share of the budget. The anticipated savings—Krueger is expecting a "not inconsiderable contribution"—will then be allocated during budgetary discussions to other areas.

Krueger believes that "fear of technology, rather than a creative spirit," prevails in Germany. Some scientists see fields of research as "heritage," rather than opening them up to competition from new ideas.

### Germany: Dornier Requests More R&D Funds

MI0109084693 Bonn DIE WELT in German 27 Jul 93  
p 13

[Text] Workers at the Dornier subsidiary of DASA [German Aerospace Agency] have called for increased research funding from the federal government to compensate for declining expenditure on armaments and space flights. A statement by Dornier's works council claims that Germany will suffer a decline in technological standards if the planned drastic reduction in subsidies for space flight development is enforced. Dornier could not totally compensate for cuts in the defense budget through civilian projects, which would give rise to fears of further job losses. The announced reduction in funding for manned space flights was particularly criticized.

### Telecommunications Minister on France Telecom Privatization

BR2608103293 Paris INDUSTRIES in French Jul-Aug 93 p 4

[Unattributed article: "France Telecom Changes its Status"]

[Text] France Telecom is going to have to change its status. Gerard Longuet [telecommunications minister] has given his support to a change toward a private, but mainly state-controlled company. This decision is in line with the recommendations put forward in the Dandelot report, recently submitted to the minister. The objective is to allow France Telecom the freedom of movement needed for it to compete effectively in the rapidly developing telecommunications market.

"I hope that France Telecom, which is in fourth position worldwide, finds partners in Europe to make absolutely sure that neither a major Japanese nor a U.S. company takes over the better markets," the minister stressed to the press.

The current status of the telecommunications operator as a public company which has no capital of its own indeed prevents it from forming any real international partnerships. Its recent defeat by the UK company British Telecom, which succeeded in concluding a partnership agreement with the U.S. company MCI, taking 20 percent of its capital, was significant on this score.

According to Marc Dandelot, author of the report, partnership agreements are indispensable today, and Deutsche Telekom is "the most natural partner" for France Telecom.

The new status will also provide France Telecom with far more autonomy in the running of its activities. In order to finance investments, which will remain high, and to match ever stronger competition on equal grounds, the operator will first have to gain more autonomy with respect to the state, warned Dandelot.

The opening up of capital could take place by allowing "strategic" French or foreign partners to participate in the capital and, above all, by introducing a minority, but substantial part of the capital into the stock exchange. The latter would "constantly oblige the company to maintain transparent accounts, a justifiable strategy, and rigorous management procedures. It would counterbalance the majority stake of the state and would reduce the risk of reinacting past errors," underlines the report.

Still, France Telecom remains a mainly state-owned company and will not be fully privatized because of its responsibilities as a public services provider and also because "the public system allows for long-term objectives to be favored over short-term ones."

Under the new status, which should be fully in place at least two years before the end of 1998, the personnel will maintain its current rights (civil servant status and retirement scheme).

Telecommunications Sector in France in 1992

Indicator	Services	Industry	Total
Personnel	187,880	48,920	236,800
Revenues	Fr135 billion	Fr45.1 billion <sup>1</sup>	Fr180.1 billion
Investments	Fr32 billion	Fr8.6 billion	Fr40.6 billion
Sales Balance	+Fr1.1 billion	+Fr3.4 billion	+Fr4.5 billion

Footnote 1. Civilian and military sectors, including associated services (installations, cabling, leasing, maintenance, and repairs)

### Germany: 1994 Research Budget Estimated Insufficient

BR2408081893 Munich SUEDEUTSCHE ZEITUNG in German 6 Aug 93 p 5

[Text] The SPD [German Socialist Democratic Party] has called for an increase of at least 200 million German marks [DM] in the 1994 research budget of DM9.46 billion, which it regards as completely inadequate. "If we

are to regain our prosperity, Germany must not fall victim to hostility towards technology," said its spokesman on research matters, Josef Vosen, in Bonn. He stated that, for the first time for more than 20 years, the proportion of the federal budget accounted for by research would fall to less than two percent as things stand.

The SPD is calling for additional funding for equipping the research institutes in the new German laender, for



information technology, and for research into biotechnology and materials science. Funding for nonnuclear energy research and environmental research should also be increased. Cuts could be made by using general budgetary funds in future to finance the costs of decommissioning research reactors and the Karlsruhe reprocessing plant, rather than this being the research ministry's responsibility as previously. Neither was there any urgency in building the Munich II research reactor.

Vosen was strongly opposed to the government's DM122 million increase in funding for the European Space Agency at the instigation of Finance Minister Theo Waigel of the Bavarian CSU [Christian Socialist Union]. In view of the space companies located in Bavaria, Waigel suspected "lobbying." This could not, however, be the basis of a research policy. Since the SPD considers that expenditure should be curtailed for manned space flight in particular, Vosen also argued that the German Space Agency (DARA), established a few years ago, should be "severely slimmed down."

## CORPORATE ALLIANCES

### Siemens, Skoda Set Up Joint Venture

BR0109085293 Eschborn NACHRICHTEN FUER AUSSENHANDEL in German 23 Jul 93 p 1

[Text] Following several years of negotiations, the Power Plant Division of Siemens (KWU) of Berlin and Munich and the Pilsen-based company Skoda, will establish a joint venture for turbine manufacture and are also planning to extend their cooperation to generators. The two companies have signed a preliminary contract to this effect, Siemens stated on Thursday. Siemens will have a 51 percent stake in the new firm, Skoda Energo, to be based in Pilsen; the remaining 49 percent will be held by Skoda.

### Germany: Takeover of IABG Defense Company Still Under Discussion

BR0109084393 Bonn DIE WELT in German 2 Aug 93 p 12

[Text] No apparent obstacles remain to the sale, called for by the Bundestag, of the state-owned defense technology firm Industrieanlagen-Betriebsgesellschaft mbH (IABG) [Industrial Plant Company] of Ottobrunn to a solely German consortium. Yesterday, the Bavarian Trade and Industry Ministry stated that a group of firms led by the German Merger Company of Frankfurt is ready for the takeover. The consortium's members are reported to be the Bavarian State Bank, DASA [German Aerospace Company], Diehl, MAN Technology, Rheinmetall, and Vulcan Electronics; a meeting of the consortium took place in Ottobrunn on Friday, chaired by Bavarian Trade and Industry Minister Otto Wiesel. Following discussions with the Finance and Defense Ministries, a declaration of intent to take over IABG was issued and is to form the basis of a bid to be lodged with

the federal government, with a view to completing the takeover within four weeks. Only last Wednesday, Wiesel had stated that a German-French consortium planned to take over IABG.

### Aerospatiale, Thomson Want Sextant, Allied Signal Alliance

AU2608075593 Paris AFP in English 2050 GMT 25 Aug 93

[Text] Paris, Aug 25 (AFP)—Aerospatiale and Thomson-CSF, the two main public shareholders in Sextant Avionique, said Wednesday they were planning to link up with the American group Allied Signal, the world's second leading producer of electronic equipment for aircraft.

The two partners said they had decided to make an offer for the remaining 47.6 percent of the capital of Sextant not already held by ATEV (Aerospatiale Thomson Electronique de Vol), the holding through which they control the group.

Meanwhile Sextant Avionique said in a statement that it and the American group Allied Signal were studying creating a joint company grouping their respective activities in the aviation sector.

An agreement could be finalized by the year's end and would produce a group with a turnover of more than \$1 billion.

Sextant and Allied said they would make no further comment before the fruition, or rupture, of negotiations.

The offer for Sextant would be set at 300 French francs [Fr] a share. Quotation of Sextant Avionique shares has been suspended since August 12.

If the bid succeeds, Aerospatiale and Thomson-CSF, which hold in equal parts through ATEV 52.4 percent of Sextant's capital, would redivide the capital. Thomson-CSF would get 66.6 percent and Aerospatiale 33.4 percent.

## CORPORATE STRATEGIES

### Airbus-Boeing Competition Assessed

BR2508104093 Paris SCIENCES ET Avenir (SPECIAL ISSUE No. 93) in French Jun-Jul 93 pp 24-31

[Article by Pierre-Louis Bernard: "Battle of Giants"]

[Text] It is the toughest and most violent of wrestling matches that civil aircraft manufacturers have ever had to face. Political, economic, technological, and financial interests are combining to bring Europe into conflict with the United States. It is a ruthless battle to conquer a market of astronomical proportions.



The stakes are high: the [Airbus-Boeing] duopoly is center-stage, under the virtually impotent gaze of a single outsider, McDonnell Douglas, itself dangerously weakened. The other players, such as General Dynamics and Lockheed, pulled out long ago and have now given up for good. This battle of the giants is appropriate for a market of astronomical proportions.

Over the next 20 years, the airline companies will take delivery of approximately 13,000 airplanes of capacities ranging from 100 to 800 seats. They will use only two or three suppliers. Nonetheless, at first sight, the conditions for a ruthless industrial war do not seem to have been met. In fact, the least that can be said is that there will be room for everyone; it is quite out of the question for one of the competitors to move toward a *de facto* monopoly.

Their levels of know-how are comparable and benefit from a certain amount of upward leveling, linked to computerization and the incredible sophistication of their research methods. Also, no airline company would put itself at the mercy of a single supplier. Everyone wants competition because it is a source of technological innovation, especially if it is the only way of putting pressure on prices.

This ruthless battle is caused by other factors. First, in the United States, the export of airliners is decisive for the balance of trade. It is one of the few high-technology sectors that does not have to cope with competition from Asia. Moreover, the sudden crackdown on military budgets, brought about by the eagerness of Western governments to cash in on the peace dividend, has clamped down on the manufacture of fighter aircraft, together with the considerable foreign markets resulting from it. Hence the renewed interest in maintaining civil activities.

Another reason for the conflict is the clash between economically incompatible theories. U.S. aircraft manufacturers are of course private enterprises, answerable to their shareholders and to banks. They therefore systematically protested against the state aid lavished upon the partners in the European Airbus Industrie consortium, without stopping to ask why. This aid was of course not in the U.S.'s economic interests. The deep crisis currently affecting the commercial aviation industry aggravated the rivalry, to the point where the Americans blamed the Europeans for the relative slump in the sales of their airplanes.

On top of all this, there is the political factor. The coming of the Clinton administration has shed new light on the debate. The ultra-free-marketeerism of the Reagan era has had its day and the White House is increasingly stepping into the game, or at any rate more so than it ever did in the past.

In 1992, despite the fact that the airlines were facing a disastrous financial situation and while most of them were struggling with irrevocable financial problems and the damaging consequences of chronic overcapacity, they ordered precisely 477 airplanes worth a total of \$29 billion. Adam Brown, planning manager of Airbus

Industrie, commented that prospects have not changed, that the airline manufacturing industry still has a great future ahead of it, and that the recovery will happen. It is worth adding that airlines have been over-optimistic, ordering too many aircraft too rapidly. So all they have to do now is to wait until the overcapacity has been absorbed, which will probably take another two years.

This is exactly where the United States and Europe disagree. Boeing has suddenly cut its production rates, which has forced the Seattle giant to announce 28,000 layoffs and to indirectly accuse Airbus Industrie of being at the root of all its problems. This assertion was also voiced by President Clinton himself. "Not so!" is the immediate response from Toulouse [Airbus Industrie Headquarters], explaining that Boeing's bad planning is to blame. The air transport industry has been in crisis since 1989; the recession has since been exacerbated by the effects of the Gulf War.

The time had also come to be more discriminating, to slow down and produce less. This cautious attitude has also been adopted by the Europeans, rather than the relentless, euphoric pursuit of the same policy. Traditionally, Boeing has accounted for 60 percent of the world market. McDonnell Douglas's share is steadily dwindling because it does not offer a complete range or adequate replacement of its products. This is the reason behind Boeing's calm self-confidence; it has never for one moment considered the genuine risk of being hit full in the face. By contrast, 20 years since its creation, Airbus Industrie is still in the setting-up stage—and is therefore still growing. Since October, 1990, the consortium's managers have anticipated a crisis in the not too-distant future. They decided, without further ado, not to cut back on production but to slow down its development. In relative terms, this was obviously the easier option.

Airbus Industrie is therefore going to stabilize its overall production of all models at a total of 150 airplanes per year, at least until 1994, despite the fact that the delivery rate during this same period should have increased to 220 aircraft per year. So there will be little industrial or social damage in the immediate future.

Boeing's unease is understandable. If Airbus Industrie had not taken off as it did, the U.S.'s problems would perhaps be less worrying. If Europe is now claiming 30 percent of the market, it is thanks to massive subsidies, as they seem keen to stress across the Atlantic, which makes the competition entirely unfair. Which brings us to today's situation.

The numbers battle has been going on for two decades. The best way to understand it is to examine its background, rather than getting lost in impersonal columns of statistics.

With the advent of the jet age in the late fifties, U.S. manufacturers gained a firm foothold on the world

market, backed up by high domestic demand and technical skills that they had acquired during and in the wake of World War II. By contrast, Europe—weakens and divided—was plodding along without a common plan of action. This alone is enough to explain its run of commercial failures. Aircraft such as the De Havilland's Comet, Sud-Aviation's Caravelle, the Hawker Siddeley Trident, the BAC 1-11, Vickers' V.0, and many others demonstrated a rapidly rebuilt level of know-how, although it also proved how impossible it was to make a commercial impact in the face of all-powerful, intractable U.S. competition.

In 1969, there was an increase in European awareness which altered the course of history. Unity was a precondition for strength and for making a serious attempt to recapture a creditable share of the world airliner market. The founding fathers of Airbus Industrie—Bernard Ziegler, Roger Beteille, and Felix Kracht, in particular—were responsible for launching the company. They still had to raise the huge financial resources to launch their first large carrier, the A300-B, and then build up a genuine range of products.

There was never any question of downright subsidies. But, insofar as it was risky—to say the least—to turn to the traditional financial institutions, which in any case were wholly skeptical, and because the threshold of profitability of this extremely long-term operation was itself a long-term prospect, the partner countries put together a highly elaborate system of repayable advances. It was these repayable advances—well on the way to being repaid—which the Americans insisted on calling subsidies from day one. This led to an interminable and recurring dialogue of the deaf.

Airbus Industrie, now in orbit, gradually gained its independence. It has since delivered over 1,000 aircraft, offers a virtually complete range, and has an order book currently worth approximately \$90 billion. Its manufacturing activity provides work for 80,000 people throughout Europe. So the time had come to "standardize" the method of financing the programs run by the joint venture, making it credible and virtually independent. This also provided an opportunity to pacify the United States.

The keystone of this observation is that Airbus Industrie should, in the future, not only continue to repay the state advances awarded to its partners, but also move swiftly toward more "conventional" financing methods.

The most recent addition to the range, the A321, a medium-haul 186-seater airplane based on the A320, was launched without assistance of any kind, its development financed entirely from internal funds and conventional loans. The same will soon be true for the A319 (124 seats).

The Americans have never admitted that there is any fundamental difference between repayable advances and genuine subsidies. In view of this, and with astonishing persistence, they have repeatedly said that Europe was

undoubtedly in a position of unfair competition. According to their calculations, the partners in Airbus Industrie received aid amounting to somewhere in the region of \$26 billion. Europe, while emphasizing the fact that repayments have already been made, retorted that U.S. manufacturers were greatly benefiting from substantial aid packages which were constantly being renewed, lavished on them on the one hand by NASA and, on the other, by major military contracts with many civil implications.

Legal cases have piled up before the GATT (General Agreement on Tariffs and Trade) authorities. The argument took off with renewed vigor when the dual A330/A340 program was launched, involving long-haul jumbo jets that would introduce European competition on the U.S.'s prime private hunting ground. Finally, the EC agreed to restart negotiations with the United States in a spirit of appeasement, indicating its firm desire to bring them to a successful conclusion. In July, 1992, the negotiators finally reached agreement in the form of a compromise acceptable to both parties present. Its essential points were: Financial support for civil aircraft programs is admitted in the form of advances repayable as sales progress and which should not exceed 33 percent of development costs, at an interest rate equal to that for government loans for the first 25 percent and equal to this rate increased by one point for the remaining 8 percent; indirect government aid to manufacturers is restricted to 3 percent of the annual revenues of the civil aviation industry of an country, or to 4 percent of the annual revenues of a particular company; programs already under way are not affected by the agreement, which therefore has no retroactive effect. Finally, the agreement only affects commercial aircraft which can carry more than 100 passengers.

Andre Dureson, director of civil programs at the DGAC (French Directorate General for Civil Aviation), remarks: "It is a compromise, but at least we have achieved it, and it will avoid a trade war between the United States and Europe, which would have had serious consequences for the European aeronautics industry."

So, is this the end of the story? Not quite! This agreement is in fact strictly bilateral, between the United States and the European Community, and it should be given a wider field of application—within the framework of GATT. This is no easy feat, but the negotiators optimistically intend to pull it off by July 1993.

The Clinton administration has not shown any genuine intention to denounce the agreement of July 1992. However, such an impression was falsely propagated when the newly-elected President delivered a speech on 10 February this year, which was vigorous to say the least. The speech was given in the Everett plant, near Seattle, location of the final assembly line for the Boeing 747.

In late March, Washington launched a new attack—this time using a new argument. Airbus Industrie was said to

be offering its airplanes for lease, under absolutely unbeatable conditions, and, of course, using inexhaustible state funds. However, the effect was lost as it soon became obvious that American aircraft manufacturers were frequently on the receiving end of comparable acts of relative generosity. What else can we expect at a time of economic slump?

This year, Airbus Industrie will achieve revenues of \$8.7 billion and will, for the third year in a row, make substantial book profits. Boeing, which is losing ground, is forecasting 1993 revenues in the region of \$26 billion and, in spite of a clear downturn, profits which will certainly please its shareholders. So this is no poor man's quarrel.

Boeing—the omnipresent and uncontested world leader—is de facto in the front line, to such an extent that several analysts and experts are starting to overlook the influence of another giant, McDonnell Douglas, which has been relegated to the role of simple outsider—at least in the civil aviation market.

The group, based in St. Louis, Missouri, and now restricted to around 10 percent of the market, is going through a difficult stage. Traditionally the top Pentagon supplier, with programs ranging from the F-18 combat aircraft to Tomahawk and Harpoon cruise missiles, it cannot get its California-based civil sector off the ground.

The MD-11 tri-jet, the successor to the DC-10, is enjoying only moderate success, while the interminable line of MD-80/90 twin-jet planes, directly based on the DC-9, is beginning to show serious signs of running out of steam.

There is certainly no shortage of projects: from the 100-seater, new-generation MD-95 to the MD-12 airliner, whose stated objective is to break the monopoly of the 747. However, McDonnell Douglas does not have the financial resources to enable it to spring into action.

The attempt to make a subsidiary out of Douglas and to open up its capital to Taiwan Aerospace ended in bitter failure. After long months of trying, the quest for other partners has yielded no tangible results. In St. Louis, they have all the more reason to feel resentment toward Airbus Industrie: The European company's unflagging growth had virtually no effect on Boeing's market share, while the California-based airplanes took a severe blow. Opinions are divided, to say the least, on McDonnell Douglas's future as a civil aircraft manufacturer. John McDonnell, managing director of the group, persistently affirms that there can never be any question of giving up, even in the long term. The fact remains that this is a prospect which regularly resurfaces, further increasing the tension within the U.S. Administration.

Peace between Boeing and Airbus, insofar as it is a genuine possibility, could come about for quite different reasons, for example if the two sides could be convinced to jointly launch a new-generation superjumbo jet.

While this may seem somewhat unrealistic at first glance, it is nevertheless worth bearing in mind. Within a decade, a whole new market will have been created involving superjumbos capable of carrying 550 to 800 passengers. These aircraft, designed especially for heavily used routes, will bring down operating costs and relieve the congestion—not to say saturation—on some of the most frequently used air corridors.

Boeing is giving this type of concept some thought, under the provisional name of NLA—New Large Airplane. Airbus is thinking along similar lines, known as UHCA—Ultra-High Capacity Aircraft, the future A350.

Aerospatiale, Deutsche Aerospace, and British Aerospace are also taking their first tentative steps, fully aware that the time for making decisions will not be until the end of the decade at the earliest.

An NLA/UHCA requires an investment of around \$15 to \$20 billion. However, the market for such an airliner will be limited. The program is likely to last for a very long time, but to progress relatively slowly. Consequently, there will certainly be no room for two contenders. That was tantamount to imagining the impossible. At the beginning of this year, Airbus Industrie's German partner, Deutsche Aerospace, took the initiative and simply submitted to Boeing a proposal for an initial joint approach to the project. Still, a direct association between Boeing and Airbus Industrie as such is out of the question, just when negotiations are under way which will once again bring the old enemies up in front of the GATT courts. Here again, nuance and compromise played a part—it was the individual partners in the consortium, in their own right, who signed a framework agreement with Boeing relating to joint exploratory research.

This may be the starting point for an entirely new situation. Of course, the past will not be forgotten, nor will everyday competition, but in theory there should be nothing to prevent a merger between the NLA and the UHCA, creating the first truly global commercial airplane. Japan and Russia could also take part. Today, this theory still smacks of industrial fiction, but this initial document, which admittedly is not yet very binding, demonstrates that this type of prospect could well be reality by the end of the decade. Until then, the transatlantic sparring match will continue unabated.

#### **Bavarian Government Sells DASA Shares to Daimler**

*MI1808095993 Bonn DIE WELT in German 26 Jul 93 p 11*

[Text] The Free State of Bavaria is withdrawing from Deutsche Aerospace AG (DASA, Munich) and selling its 8.58-percent DASA stake to Daimler-Benz AG (Stuttgart). As DASA's parent company, it is contractually obliged to take the shares. Prime Minister Edmund Stoiber, Daimler-Benz Board Chairman Edzard Reuter

and DASA chief Juergen Schrempp launched the privatization at the weekend, the Bavarian State Chancellery said.

Accordingly, the Free State's 2.24 percent direct holding and its indirect stake of 6.16 percent held by the Land Institute for Reconstruction Financing will pass to Daimler-Benz on 31 December this year. The necessary talks on the valuation of the share package would begin shortly. Nothing was said about the purchase price, but industry observers assume it will be several hundred million German marks [DM].

Stoiber said the funds made available by the deal would be used to secure and develop forward-looking jobs. Stoiber pointed out that the Free State's remaining shareholding in any case gave it no significant influence over the company's decisions. The original objective of building up an efficient, competitive aerospace industry today no longer needed the support of a State holding.

Apart from the former MBB which was merged with it some time ago, the DASA Group also includes Deutsche Airbus GmbH (Hamburg), MTU (Munich), Dornier (Friedrichshafen), the Franco-German Eurocopter company and the Netherlands Fokker.

#### East European Mobile Phone Systems Compared

BR1708103793 London MOBILE COMMUNICATIONS INTERNATIONAL in English Summer 93 pp 24, 26, 28

[Article by Ian Channing: "Regional Focus: Eastern Europe"]

[Text] The collapse of the former Soviet empire and the opening up of Eastern Europe has been seen by telecommunications manufacturers and operators in the West as a potential business bonanza. It is hardly surprising that they should take this view. The countries of Eastern Europe are desperate to kickstart their shattered economies and recognise that a good telecommunications infrastructure is a vital prerequisite for economic growth.

Fifty years of under-investment and lack of access to modern technology have left Eastern Europe with an antiquated and inadequate telecommunications infrastructure. Telephone penetration is minimal and the length of waiting lists for new phones is legendary. The level of investment required to bring these systems up to par with their Western equivalents is enormous and therein lies the snag for hopeful entrepreneurs. Despite the desperate need for good national and international telecommunications the resources to pay for them are non-existent. Even when systems are installed the level of income per head is too low to allow the ordinary user to have access to the new technology. This inevitably means that the users of the new telecommunications networks in Eastern Europe are foreign businessmen, diplomats and government officials. None of the new networks being installed are likely to benefit the ordinary consumer in the short or medium term.

In virtually every case the need for overseas investment and technological know-how has meant that local operators have had to look for foreign partners.

#### The Mobile Scene

The cost and disruption involved in cabling offices and homes has driven Eastern European operators to choose mobile to provide national and international communications rapidly. Cellular radio networks are being rolled out across the region and are beginning to attract substantial numbers of subscribers. At the end of 1992 there were some 50,000 cellular subscribers in Eastern Europe and this number is forecast to increase to 200,000 by 1995. As the average cost of ownership is around \$7,500 a year and the average salary is \$50 a month, this predicted market growth is remarkable.

Although there are a number of mobile communications solutions being adopted, including PMR [private mobile radio] and paging, the bulk of the activity is in cellular radio. To operators struggling to provide telecommunications capacity, cellular offers a number of benefits. By choosing a well established standard, cellular networks can be rapidly and cost effectively deployed. Networks can be dimensioned to meet demand and easily expanded in line with growth. This expansion can be paid for out of revenue, reducing the level of initial investment required. In due course, when fixed line systems are in place, the mobile network can be redeployed in other areas of need. The cellular technology being used throughout Eastern Europe is NMT450 [Nordic Mobile Telephone 450], a well established standard with equipment and systems available off the shelf. Because of the way the different networks have developed there are a number of local variants—Croatia operates at 415 MHz—which means that international roaming is not possible. NMT900 cannot be implemented in the majority of Eastern European countries as the spectrum is used for military purposes.

Like their counter-parts in the West, subscribers in Eastern Europe like handportables. Originally NMT450 did not support handportable use but a new variation of the standard—NMT450i—has been developed, which offers a number of NMT900-type facilities including handportable coverage. The implementation of NMT450i in Eastern Europe has restimulated interest in this technology and a number of suppliers—notably Philips and Nokia—have developed new NMT450 subscriber terminals.

Interest in GSM [global system for mobile communications] is high in Eastern Europe. Russia has awarded 12 licences and Hungary is in the final stages of selecting two GSM operators. Other countries in the region have indicated their intention to go down the GSM route.

However there are problems with implementing GSM in Eastern Europe. The most significant is the question of



exporting GSM's encryption technology. The COCOM [Coordinating Committee for Multilateral Export Controls] restrictions, which still affect the majority of countries in Eastern Europe, make it impossible to sell and install GSM equipment which has the A5 algorithm. The GSM MoU [memorandum of understanding] group has sought to overcome this problem by proposing a three level approach. Approved countries will be permitted the full A5 capability, others will either have the less complex A5X algorithm or no encryption at all. Whether this proposal will resolve the export restriction problem and allow the rollout of GSM in Eastern Europe is yet to be determined. Time may solve the problem as countries are removed from the COCOM list.

### Country Analysis

#### Russia

For any Western operator looking to develop cellular networks in Eastern Europe by far the biggest challenge is Russia. Its size, intensely bureaucratic institutions and ongoing political and economic problems make Russia an operator's nightmare. Nevertheless, if these difficulties can be overcome the Russian market is potentially the most lucrative in the region.

At present there are two analogue networks operating in Russia—one in Moscow and the other in St. Petersburg. Both are operated by consortia comprising local participation and Western operators. In Moscow, US West and Millicom have joined with the Moscow Eye Microsurgery Institute to form Moscow Cellular Communications which operates a NMT450 network using Ericsson equipment. The network has around 2,000 subscribers. The major problem affecting growth is the poor quality and lack of capacity in the Moscow telephone system. In St. Petersburg the Delta Telecom consortium, which also has US West as the main Western participant, has an NMT450 network with around 1,000 subscribers.

Following a confused tendering process the Russian authorities have issued twelve GSM licences. US West swept the board winning eight licences with two local partners and joint licences in two other cities. US West and Russian joint stock company Intertelcom won the licences for Perm, Novosibirsk, Nizhni Novgorod, Blagoveshchensk and Petropavlovsk. These two companies, together with VART, a grouping of Russian telecommunications equipment manufacturers, were awarded the licences for Vladivostok, Sochi and Khabarovsk. Joint licences were awarded to US West and Intertelcom for Samara and Bashkortostan. The only cities where US West was not selected were St. Petersburg, where a consortium of Nordic PTT operators and the local telephone company was successful, and Moscow where the licence was won by Bell Canada.

In a separate development the authorities in Vladivostok are believed to be negotiating the award of an analogue cellular licence to Commstruct International.

The Russian authorities are also planning to introduce a new regional mobile standard although no technical information has been released. Investigations are also to be undertaken into the possibility of introducing PCN [personal communications network].

#### Poland

Centertel, the Polish cellular operator, is a consortium of Ameritech, France Telecom and the Polish PTT. Slower to get off the ground than Hungary's Westel, Centertel opened its service in mid-1992. Around 2,000 subscribers had been signed on at the end of 1992. The Polish authorities have expressed interest in GSM but to date have made no positive moves concerning the issue of licences.

#### Czech and Slovak Republics

The cellular systems in both parts of the former Czechoslovakia are run by Eurotel. A consortium of US West, Ameritech and the two PTTs. Eurotel has switch nodes in Bratislava and Prague, and effectively operates as two companies. Initial pricing was high and this restricted demand. However, following a price cutting and marketing program, demand is picking up and over 6,000 subscribers were on the network at the end of 1992.

#### Croatia and Slovenia

The Balkan conflict has badly affected the cellular systems in Croatia and Slovenia, with large parts of the networks being systematically destroyed. Nonetheless both operators, who are among the few without Western partners, have continued to develop their Ericsson-supplied NMT networks. At the end of 1992 there were 4,000 subscribers in Croatia and over 5,000 in Slovenia.

#### Romania

An NMT450 system was due to come on stream in Bucharest in March 1993. It will be operated by Telefonica Romania SA, a consortium between Spain's Telefonica and state owned Rom Telecom and Radiocommunicatii RA. Telefonica holds 60 percent of the joint company. The network is scheduled to cover all main cities and 70 percent of the population within five years.

#### The Ukraine

Earlier this year the Ukrainian authorities awarded an invest-build-operate licence for a cellular system to a consortium of Deutsche Bundespost Telekom, PTT Netherlands and Tele Denmark. Known as UMZ, the network is planned to begin offering service in Kiev in mid-1993 and will roll out to cover 21 cities within three years. The NMT450 network will be dimensioned for 50,000 subscribers.

#### Bulgaria

Cable & Wireless are the leaders in a consortium which has been awarded a licence to build an NMT450 network in Bulgaria. The telephone company and other local



interests are also in the group. Interest has been expressed in GSM but at present the frequencies are not available.

#### **Tatarstan**

Hughes Network Systems has been awarded a \$48 million contract to build an advanced satellite and cellular communications system in Tatarstan. The system is planned to begin service late in 1993.

#### **Uzbekistan**

A joint venture between the local Ministry of Communications and the American International Communications Group is to install an NMT450 system in Uzbekistan. The network will use Nokia equipment and is planned to have 60,000 users within five years.

#### **Belarus**

The NMT450 network operated by Belcel was scheduled to open for service at the beginning of May 1993. Originally Belcel was a 50/50 consortium between US company Commstruct International and the Belarus Ministry of Post and Telecommunications. Earlier this year Cable & Wireless bought 40 percent of Commstruct's equity in Belcel. The network uses Ericsson equipment and is planned to reach 350,000 subscribers by 1998. The Belcel network is linked internationally through satellite to Cable & Wireless Mercury system in the UK. There have been rumours that the Belarus Government is to issue a second cellular licence but these are unconfirmed.

#### **The Baltic States**

Geographically and historically, Lithuania, Estonia and Latvia had a running start in the development of their mobile communications systems. They are close to their Nordic neighbours who have traditionally been involved in supplying communications services. Both international access and mobile services have been supplied by Finland, Sweden, and Denmark, originally with switches located in the home countries. Since the collapse of the Eastern Bloc all three countries have installed their own mobile switches and are beginning to build up their cellular networks.

The Latvian Mobile Telephone Company is a joint venture between the local telephone operator, Telecom Finland and Telecom Sweden. Using mainly Nokia equipment, the network was opened in late 1991 and currently has over 1,000 subscribers.

In Lithuania the network is operated by Comliet, a joint venture between Millicom, the telephone company and local manufacturers. The system has around 1,500 subscribers and offers manual roaming into Latvia and to St. Petersburg.

The Estonian Mobile Telephone [EMT] Company has over 2,500 subscribers as well as a substantial number of roaming customers. EMT is a joint venture between

Telecom Finland, Telecom Sweden and the local telephone company. Demand is high and the company forecasts a subscriber base of 50,000 by the end of the decade.

#### **The Rest of Eastern Europe**

In addition to the well advanced systems described above, plans to introduce mobile communications are also well advanced in other parts of the former Soviet Bloc. Azerbaijan, Armenia, Georgia, Kazakhstan, Moldova and Turkmenistan are all proposing to introduce cellular networks over the next few years.

#### **Conclusion**

Space does not allow a closer look at other mobile technologies being implemented in the region such as PMR and paging. Nevertheless, an examination of the developments in cellular indicate that those who view Eastern Europe as a huge potential market for both operators and manufacturers are on the right track. It will require a lot of patience as payback times are likely to be very long. However, the introduction of modern telecommunications should enable the countries of Eastern Europe to make giant strides towards economic recovery. This will in turn stimulate further demand for communications, creating a massive new market for Western European suppliers of equipment and services.

#### **VW's Piech on Productivity, Costs, Subcontractors, Management**

93WS0639 Duesseldorf *HANDELSBLATT* in German  
3 Aug 93 pp 13-14

[Advance copy by HANDELSBLATT of interview given by Dr. Ferdinand Piech, chairman of the Volkswagen board of management to FOCUS; place not specified: "Finally, a Car for the People; We Can Beat the Japanese" first paragraph is HANDELSBLATT introduction]

[Text] Volkswagen has been having a rough time lately. Is there a light at the end of the tunnel? Will "management by collision" be their recipe for success? Are they really going to eliminate 95 percent of their subcontractors? Dr. Ferdinand Piech, chairman of the Volkswagen board of management, explains in the following interview how he plans to bring about the changes in the hearts and minds of the workers that will enable them to make the quantum leap in production necessary to catch and, as Piech is determined to do, pass the Japanese. He also points out to what extent the engineers dominate the Volkswagen board of management, and explains exactly why Mr. Lopez, the board member from Spain, is so indispensable. Mr. Piech gave this interview to FOCUS, the magazine distributed by the renowned employee counseling firm Egon Zehnder International (not to be confused with the Munich news magazine FOCUS). Due to the interesting statements made in the interview, we are offering it here as an advance copy. The editors.

[FOCUS] Dr. Piech, you are not one to back away from conflicts. You do not hesitate to remove executives who, as you put it, do not deliver what they are paid to. You have picked a fight with General Motors, the largest automobile manufacturer in the world. You drive the German parts subcontractors mercilessly, and draw the accusation that Volkswagen is bullying the entire auto industry. Is "management by collision" your new recipe for success?

[Piech] To the contrary, we want to avoid problems—by working together, not as adversaries. Incidentally, it would be more accurate to say that GM has picked a fight with Volkswagen. Because we have no time to waste, however, we must solve the problem immediately. The criticism of our rapid pace has been exaggerated to the public.

[FOCUS] By members of the board of management of other firms as well?

[Piech] I cannot rule that out. We must face reality, however. The demand for automobiles has fallen faster than we could have possibly imagined, and it has done so simultaneously in almost all the important markets. The recession has brought structural and cost-related problems throughout the industry painfully to light. It is we, not VW, who must acknowledge after eight years of prosperity that we have not done our homework. To make up for lost time virtually overnight will demand all of our ability, creativity, and energy. After all, the voluntary hands-off by the Japanese of the European market will only last for 24 months. If we have not caught up with them by then, we never will.

[FOCUS] What do you consider the most important point of departure for your survival strategy?

[Piech] The customer! He determines our actions, both external and internal. He is the one who passes judgment upon our products. We must provide him with the right quality model at the right price, with the right services. Internally, this means that we must avoid anything that costs us money, but is not paid for by the customer. Presently, a no-frills Volkswagen is more expensive than the no-frills cars offered by our competitors. To solve this problem, we must significantly reduce all of our costs.

[FOCUS] Has there not until now been a general consensus that Germany, as a high-wage country, would do better to compete in terms of quality rather than in terms of cost and price?

[Piech] There must be a balance between the two. Quality in every sense of the word must govern our everyday thought and activity. At the same time, we must use lean, streamlined production processes to rapidly increase productivity. We must reduce the diversity of our parts, eliminate hierarchies, and create team structures.

[FOCUS] But Volkswagen will still never be the leader in low-cost automobiles that it was in the days of the VW bug.

[Piech] Why not? After all, the word Volkswagen means the car of the people. We must once again offer them a car that they can afford—as a new car, not a used one.

[FOCUS] The new entry-level model will be called the Chico and be manufactured in Wolfsburg beginning in 1995, is that correct?

[Piech] The Chico is intended to demonstrate that a small car can be manufactured economically in a town with seemingly unfavorable conditions. It will be manufactured using the most modern methods, both in terms of technical procedures and in terms of organization. These modifications will require both a change in the way that the workers think and a willingness on their part to look for more intelligent ways to organize work.

[FOCUS] This is very ambitious when one considers that in 1992 Volkswagen produced only 12.8 vehicles per worker, whereas Ford produced 17.8, and Toyota, believe it or not, produced 42.8.

[Piech] The extreme variations in the manufacturing slowdown play a part in those figures. The following comparison is more applicable: The best Japanese worker can manufacture a car in 12-13 hours, a Volkswagen worker takes 19 hours.

[FOCUS] How do you intend to close this gap?

[Piech] With a quantum leap. We want to beat the Japanese the same way that the Swiss did. The Swiss watch industry seemed to have no chance against the Japanese. But their Swatch enabled them to catch the Japanese from below, and their designs enabled them to beat them from above. In a similar manner, we will combine the most economical car with the most advanced design and state-of-the-art technology. Our motto is the "eight-cylinder Audi with aluminum body." The Japanese can be beat, and we here at Volkswagen have what it takes to beat them.

[FOCUS] But the Japanese are not sitting around doing nothing. Are you not starting this race like the rabbit that has no chance against the hedgehogs from the Far East, Europe, and the United States?

[Piech] We are talking about competition, not fairy tales. We will make quantum leaps by offering safe, economical, environmentally sound automobiles. Cars that get better than 100 km per 5 liters of gas are already available. Within a few years we will produce cars that get 100 km per three liters. We are also conducting intensive research on traffic accidents in order to increase the safety of our automobiles.

[FOCUS] Why does Volkswagen still produce so many more of its own parts than does Toyota, for example? What percentage will you produce in 1993?

[Piech] At the end of 1990, we produced 40.5 percent; at the end of 1992, we produced 35.8 percent. That will be our target figure for the next few years. But we must be flexible. The deciding factor is whether our aggregate and individual parts factories can hold their own against the best external domestic and foreign subcontractors. As long as the gear plant in Kassel is the best in the world, it will continue to grow, and will sell parts to other automobile manufacturers as well. The axle plant in Brunswick is also very good. Every VW parts manufacturing plant should be productive enough to be able sell parts to other auto manufacturers. We need to turn cost centers into profit centers. But this must be decided on the open market. For the present, we want to use more high-quality aggregate parts in our vehicles and fewer individual components.

[FOCUS] This endorsement of internal parts production sounds slightly different than the policy of a few months back.

[Piech] Not at all. We want to take every opportunity to optimize the entire value creation chain, from raw materials to the subcontractor, the factory, marketing, all the way to the customer. For this reason, every Volkswagen parts factory must also compete against external subcontractors. The reverse is true as well, of course. This is also why it is so important to reduce the diversity of the components used in our automobiles. There are tremendous opportunities here for savings. There is no reason to use more than 64 different generators in the Golf. A Japanese car contains only six. In the future, we would like to get by with three.

[FOCUS] You appear to be moving towards a standard model.

[Piech] By no means. We will respond to the individual wishes of our customers better than ever with a more extensive selection of models and options. Without eliminating the differences between models, we would like to employ the modularity principle to use as many identical components as possible. This will enable us to achieve the cost advantages that will make the difference.

[FOCUS] It seems to me that Volkswagen has been talking about the modularity principles for over two decades, but the necessary advances have never been made. Why are you so certain that you will be successful now?

[Piech] It is true that the methods for optimizing the value creation chain have been common knowledge in the auto industry for years, most recently as a result of the book "The Second Revolution in the Automobile Industry." But we often lack the ability to implement the knowledge. That is why we are so happy to have Mr. Lopez as head of our new "Production Optimization and Procurement" division. He is one of the few people who has this ability.

[FOCUS] General Motors, which has instituted legal proceedings against you and seven of your colleagues, views this differently, and has accused Volkswagen of industrial espionage. They claim that entire cartons of GM documents were taken. Opel documents in particular.

[Piech] That is ridiculous. Mr. Lopez carries his qualifications in his head. What General Motors has lost is its ability to follow things through, and we are reaping the benefits. That is why it is incomprehensible to me why GM is attempting to tarnish the impeccable reputation of Mr. Lopez and his colleagues and to discredit the entire Volkswagen conglomerate.

[FOCUS] This could have a detrimental effect on the sale of Volkswagens in the United States.

[Piech] I hope not. The facts are these. Mr. Lopez had no contract in Detroit. But after he signed a contract with us late on the evening of 9 March, General Motors tried to lure him into breaking it. They were unsuccessful. Mr. Lopez stood by his contract—not, I might add, for financial reasons. The figures cited by the press are pure fantasy. They are just as exaggerated as are the descriptions of his working methods. Mr. Lopez's salary is not excessive by the auto industry standards; beyond that I will not comment.

[FOCUS] Still, your fellow member of the board of management seems have a knack for upsetting people. Your subcontractors, some of whom feel threatened, are still uneasy. A well-known head of a conglomerate told us recently that German small businessmen will not put up with this, that they will not let themselves be bullied.

[Piech] We are not threatening anyone. We are talking with one another on a regular basis, however. We recently asked the University of Bamberg to do a price analysis for us on certain parts, such as starters, oil filters, and cylinder heads, that are being provided to us by our subcontractors. Using the formula 1975=100, the 1990 purchase price comes out to 140 for the Audi 80 and 125 for the Golf, but for the Opel Kadett it is only 110, after having risen to 120 in 1985. This price turn was the result of the efforts by Mr. Lopez at Opel. His mission now is to achieve for the Volkswagen what he achieved for the Kadett. We are telling our subcontractors the same thing. We can only achieve our goal of world-wide leadership by working together with our subcontractors, and only by achieving this goal can we guarantee our own future. If we do not, we will all eventually be working for the Japanese.

[FOCUS] You promise solidarity. Yet at the same time it has been reported that Volkswagen wants to reduce the number of its subcontractors by more than 95 percent, from over 10,000 to just 400.

[Piech] I know that figures such as these have been cited. But they are false. It is true that, until now, we have placed direct orders with over 10,000 firms. The majority of these are craftsmen and service firms located

close to the plant or manufacturers of capital goods. We currently obtain automobile parts from fewer than 2,000 firms. We intend to reorganize this system. We want to deal permanently with between 60 and 100 systems subcontractors. This has nothing to do with the overall number of subcontractors, however.

[FOCUS] What does that mean in hard figures?

[Piech] I'll give you an example. In the past, Audi obtained the individual parts for its instrument panels from 22 subcontractors and assembled them itself. Now there is only one logistical partner, which assembles the entire panel for us. Where they obtain the individual parts is up to them. If this systems partner is located close to the factory, there is an additional advantage. The logistical net is shortened.

[FOCUS] You will be generating enormous pressure for integration within the subcontractor industry.

[Piech] Consolidation of resources is both necessary and beneficial. That is why we want to involve our systems partners in the development of new models as early as possible, and that is why we will offer them lifetime contracts. This way we will be able to work together for not only the current model cycle but hopefully for the next model as well.

[FOCUS] How uncompromisingly and rapidly can one implement such a radical change without jeopardizing the common industrial base?

[Piech] We demand no more of our subcontractors than we are do of our own plants. Admittedly, that is a great deal. Up until last year, we had to utilize 100 percent, and in some cases even more, of our plant capacities in order to make a profit. We are now utilizing 85 to 90 percent, and within six years at the latest, all plants must be at 70 percent. Audi has made the most progress, and will be at 68 percent by the end of 1993. We are always on the lookout for unproductive activities so that we can eliminate them.

[FOCUS] What problems does the wage structure cause? The average VW wage is considerably higher than the industry average—some say as much as 20 percent higher. In the interest of cutting costs more rapidly, should you not begin here?

[Piech] Given the present crisis, I do not consider existing wage agreements subject to debate. It is more important that management and workers pull together. We have the ability and the will to do so now, unlike during the good times. During those years, every rationalization success sparked a debate over who should get the credit for it.

[FOCUS] Can the wage percentages, to which the company formerly had too much claim, simply be forgotten?

[Piech] We cannot take money away from our employees and then demand 20 to 30 percent more productivity from them. Nor is it our job to use tactics such as wage

policy and incidental wage costs to narrow the gap between Germany and the low-wage countries. Our first task is to institute intelligent working procedures and improve the design and quality of our products. By thinking intelligently about the product, we can take advantage of marvelous opportunities for rationalization. We must first complete these managerial tasks. If there is still a problem at that point, we will have to use wage policy to solve it.

[FOCUS] Including layoffs? If you estimate that VW has a 25 percent cost disadvantage in comparison with the industry leaders, you can mathematically conclude that its work force is 25 percent overstrength. The planned elimination of approximately 20,000 personnel by the end of 1994, some of which has already been completed, actually constitutes less than 25 percent. Is the worst yet to come?

[Piech] If we are able to increase productivity, we will not necessarily have to resort to layoffs. The increased productivity should generate an increase in product value. We must realize, however, that Japanese automobiles deliver more for the same price.

[FOCUS] How realistic is it to expect tremendous leaps in productivity?

[Piech] Very realistic. Our first job is to thin out our management. We need only three levels of management, not nine.

[FOCUS] Is your point of departure a new organizational structure, as is so often the case with large firms?

[Piech] We are approaching this from a practical, rather than a formal, standpoint. We must solve problems where they arise, and we must do so rapidly. For this reason, we have shifted authority and financial responsibility downwards. Now the people at the bottom are responsible for making the necessary improvements themselves. Because they have the means and the power to make decisions, they can accomplish in one week what management took years to do. We are replacing structure-oriented stagnation with process-oriented dynamism.

[FOCUS] How are the workers supposed to acquire the competence necessary for this overnight?

[Piech] The workers have always known perfectly well what was wrong. Now they have the opportunity to fix it immediately. This is the heart of our continual improvement process, which is characterized by a new level of consistency and pace, and is abbreviated KVP<sup>2</sup>.

[FOCUS] The fact that the workers know that they have the right to make decisions and implement ideas does not necessarily mean that they will actually do so. Where will they get the necessary courage?

[Piech] We are counting on creating the optimal combination of personnel and individual strengths. We will be depending upon the technician, the doer, the synthesizer.



the supporter, and the visionary within the team. They will work together as a moderator team, whose job it will be to search for areas where there is room for improvement within a given arena. Mr. Lopez and his colleagues have already initiated this process, and it is spreading like wildfire throughout the entire conglomerate. Once their projects have been completed, the participants pass along their findings to new teams, the members of which will then go on to form teams of their own. As of the middle of 1993, 250 moderator teams had been formed; by the end of the year there will be over 1,000. These teams will generate tremendous resources.

[FOCUS] Does this not presuppose a profound change in the minds of your employees, a change which will not occur overnight?

[Piech] It will require a change both in their minds and in their hearts. The most important prerequisite for it will be the willingness of the management to support this change.

[FOCUS] Is this the reason for what may be the most drastic reshuffling of a conglomerate board of management to occur in the past decade, a reshuffling which climaxed in July, when Daniel Goeudevert was relieved from his position as Volkswagen production manager?

[Piech] We have structured the board of management in such a way that we will be able to function as a team in order to accomplish our mission.

[FOCUS] Three engineers in particular seem to be shaping the Volkswagen board of management at the present time: you, as chairman of the board and, as you like to point out, the individual responsible for quality and model policy, Mr. Lopez as head of production and procurement, and Mr. Schmidt as head of finance and controlling. Is engineering now of paramount importance?

[Piech] I believe we have a well-balanced board of management team. There are no clearly defined individual areas of responsibility; our tasks overlap. What is important is that we are able to combine our individual strengths. Mr. Schmidt is aided in his task by his engineering background; the engineers cannot pull the wool over his eyes.

[FOCUS] Even if the top executives and the approximately 350 top employees support and encourage this change, there is still the problem of altering the outlook of the rest of the employees—more than 200,000 of them

[Piech] Successful management philosophies are based on the concept of community of the mind, in which all workers are members of one large family. They may have their individual interests and dreams, but their moral concepts are the same. They cooperate with one another on the basis of mutual trust and respect. They take pleasure in shared success.

[FOCUS] So the textbooks say.

[Piech] This is how we have attacked it. What is important is that the process of change be accomplished not through authoritative decrees, but by finding a common cause. In order to bring about the change in mentality, we will need positive role models and on-site, hands-on experience. We will thereby create a climate of continual learning and—at least equally important—continual relearning.

[FOCUS] Let's get back to hard figures. Volkswagen posted a loss of 1.25 billion German marks [DM] for the first quarter of 1993, and you expect a loss for the second quarter as well—albeit a much smaller one. You would like to erase that loss during the final two quarters. In order to do so, you will need a sales return, after taxes, of more than 3 percent. Given that during the past 10 years Volkswagen has rarely been able to achieve over 1.6 percent, are you not being a bit optimistic?

[Piech] In order to reach our objective, we need a savings of DM8.7 billion. We are already close to that goal. Consequently, we have a good shot at staying out of the red for 1993.

[FOCUS] Are you including the decrease in investments in the firm from DM12 to DM6 billion?

[Piech] Naturally that reduces our liquidity tremendously. What is interesting, however, is that we have in many cases been just as successful with half the investments. Eliminating bottlenecks can generate enormous savings. In this manner, capacities can sometimes be tripled.

[FOCUS] What business developments does your profit expectation for 1993 presuppose?

[Piech] In 1992, we sold a total of 3.43 billion automobiles worldwide. In 1993 we are expecting 10 to 12 percent fewer sales. We expect a decline in sales in the German market of approximately 15 percent, down to one million units. As far as turnover is concerned, we are expecting a 5 percent reduction within the conglomerate and a 10 percent reduction within the corporation. It is obvious that we will not meet our earnings prognosis if sales decline more than expected.

[FOCUS] What sales returns are you shooting for in the future?

[Piech] We are aiming at 5 to 7 percent before taxes five years from now.

[FOCUS] In view of this, where will you concentrate your regional investments?

[Piech] In Germany and central, southern and eastern Europe, in Mexico for the North American region, and in the Asian/Pacific region. We expect China to have the highest growth rates in the world over the next 10 years, and we are expanding our capacities there. We presently



have 50 percent of the Chinese market share, and consequently a significant advantage. We want to maintain our leadership there and use China as a springboard into the Japanese market.

## EAST-WEST RELATIONS

### Eureka Membership Promises 'Real Economic Benefits'

PM2906122593 Moscow IZVESTIYA in Russian  
26 Jun 93 First Edition p 3

[Aleksey Portanskiy report: "Russia Has Become Participant in the 'Eureka' Program"]

[Text] The Russian Federation has been accepted into the ranks of participant countries in "Eureka," the European program for developing new technologies. The decision in principle to do this was announced 24 June at the 11th Eureka Conference, held in Paris at ministerial level.

The Eureka Program was founded in 1985 on France's initiative by way of a civilian alternative to America's "Star Wars" project. One of the chief motivations for promoting Eureka was European concern over the "brain drain" to the United States, which with its usual gusto launched a recruitment campaign of specialists from the Old World to work on SDI projects.

The idea for Eureka is based on the common philosophy of EC Commission programs—joint financing via the state or private sectors.

In practice, several (at least two) enterprises from the 20 countries participating in Eureka pool efforts to elaborate any kind of scientific-technical project. If that project is deemed innovative, then the firms receive appropriate subsidies under the Eureka policy. According to information from research, Eureka has helped to increase the competitiveness of European firms and promoted the speedy assimilation of new technologies. At present, work is underway on over 800 projects within the program's framework involving no fewer than 4,000 enterprises. Eureka's most famous projects include "Prometheus," aimed at improving motor transport, "Dzhessi" [as transliterated], aimed at elaborating new electronic components, and "Euro-track," for the protection of the environment.

Russia took part in a number of draft programs even before acceding to them officially. Now it will be able to initiate projects itself. What else will participation in Eureka give us?

"Of course, our country will now be able to profit from all the advantages which the other 20 Eureka participants enjoy," Feliks Grishayev, an official of the Russian Federation Ministry of Science and Technical Policy, told your correspondent. "Our country does have ideas of interest to the West, so the Europeans want to work with us. These include, for instance, specific projects in

the sphere of laser technology, the development of diagnostic apparatus, oil pipelines, and a program for protecting the environment. Cooperation has already been established with countries such as the FRG, Britain, and France, and there is interest from the Norwegians.

"Apart from assimilating state-of-the-art technologies, participation in Eureka will spawn real economic benefits insofar as our potential partners know the market better. There is every reason to believe that work on Eureka projects will also slow down the "brain drain" from our country, creating a necessary interest in the future for our scientists."

As noted during the Paris conference, Russia's acceptance as a member of the Eureka project, like the earlier acceptance of Hungary into the organization, testifies to the desire of program participants actively to develop relations with the countries of Central and Eastern Europe.

### Eureka Adopts New Projects, Admits Russia

93WS0616A Paris AFP SCIENCES in French 1 Jul 93  
pp 1, 2

[Unattributed article: "193 New Eureka [European Research Coordinating Agency] Projects and One New Member, Russia"]

[Text] Paris—The 11th Eureka ministers conference met in Paris on 22-24 June; at this meeting, it granted the Eureka label to another 193 projects and admitted another member, the Russian Federation.

Russia's application for membership in Eureka, the civilian initiative launched by France in 1985 in answer to the U.S. Strategic Defense Initiative (SDI), was "unanimously" approved in principle by the 21 Eureka members (12 EEC countries, six European Free-Trade Association [EFTA] countries, Turkey, Hungary, and the EEC), the final communique of the conference indicated.

This membership will become effective automatically when "remaining technical questions" are resolved. According to the French minister of higher education and research, Mr. Francois Fillon, there are two such questions: one has to do with the Coordinating Committee on Export Controls (COCOM), which was created to control high-technology exports to communist countries. A forthcoming decree of the COCOM president will lift the remaining obstacles to Russia's participation in Eureka projects, jointly with companies in other European countries, Mr. Fillon added.

Russia is the second East Bloc country to become a full-fledged member of Eureka; the first one was Hungary, which was admitted after the previous ministers conference, in 1992, in Tampere (Finland). The Eureka organization thus continues to act according to its decision—made two years ago at The Hague meeting, after the collapse of communist regimes—to open itself to

East European countries, on the condition that these countries demonstrate their ability to propose and complete projects.

The growth of Eureka is also reflected in the number of projects that were given the Eureka "label" by the research or industry ministers of member countries and by the European commissioner to research and education, Mr. Antonio Ruberti: 193 (compared with 120 in 1991, 102 in 1992); this, according to the ministers, shows that the Eureka system is increasingly successful with manufacturers.

The new projects represent a total of ECU1.8 billion (12 billion French francs [Fr]) in financing and bring to 816 the total number of Eureka projects. Already, 94 projects have been completed, 48 of which during the French presidency (i.e. since 1992).

According to the evaluation procedure set up during the French presidency, only 10 percent of the companies did not comply with Eureka rules, i.e. no more and no less than in other schemes. Eureka, however, still suffers from poor coordination among members' public financing. The conference decided to make an effort to solve these problems, in particular to eliminate the delay between the awarding of the Eureka label and the allocation of financing.

At the close of the conference, France handed over the presidency to Norway, which will organize the next ministers conference, in June 1994 at Lillehammer. According to the Norwegian minister of industry and energy, Mr. Finn Kristensen, during that year a special effort will be made in favor of small and mid-size companies in Central and Eastern Europe.

In addition, four conferences will take place in Norway between now and June, plus 18 technological seminars during the 12th conference; these will end with a meeting between participants (manufacturers, researchers) and officials.

However, the La Villette City of Sciences and Industry, in Paris, where the meeting took place, is not yet done with Eureka. After the conference, Mr. Fillon inaugurated the exhibition "Eureka: Everyday Innovation" which, until 31 August, will present to the general public 56 Eureka projects and their impact on daily life in fields such as health, agri-food, environment, and work.

#### **Belgium: Alcatel Acquires Shares of Russian Telecom Company**

*M11808100593 Eschborn NACHRICHTEN FUER AUSSENHANDEL in German 30 Jun 93*

[Text] Belgian telecommunications company Alcatel Bell has acquired a 31-percent stake in the Russian Transinform company.

Transinform operates a data communications network in Russia intended primarily for industrial and commercial customers. This was announced by Alcatel Bell when the contract was signed in Moscow.

Alcatel is making its investment by providing technical aid and equipment (including powerful modems and electronic communication systems).

The Russian companies Mintopenergo and Gazprom and the Anglo-Russian Marine Computer Systems also have holdings in Transinform.

#### **CNRS, Ukraine Sign Collaboration Treaty**

*93W50616B Paris AFP SCIENCES in French 1 Jul 93 p 4*

[Unattributed article: "CNRS [National Center for Scientific Research]-Ukraine Scientific Agreement"]

[Text] Paris—On 25 June, the CNRS announced that, under an agreement recently signed in Kiev, the CNRS and all the Ukrainian laboratories will cooperate from now on.

The agreement confirmed that 13 projects and three International Scientific Cooperation Programs (PICS) had been set up; Russian and Polish laboratories (Krasnoyarsk Chemistry Institute; Gliwice Carbochemistry Institute) will also participate.

The opening of the CNRS to these countries will make it possible "to create exchange networks in order to weave a veritable European fabric of laboratories, and to push back Europe's scientific borders," Mr. Kourilsky, the CNRS general director, stated during the signature ceremony.

#### **Fourth Franco-Russian Space Mission**

*93W50616C Paris AFP SCIENCES in French 1 Jul 93 pp 7, 8*

[Unattributed article: "Fourth French-Russian Space Mission: Altair"]

[Text] Baikonur—Less than one year after Michel Tognini, another French cosmonaut left for space on 1 July. The Soyuz-TM-17 spacecraft carrying Jean-Pierre Haignere and the Russians Vassili Tsibliev and Alexander Serebrov took off at the Baikonur space base (Kazakhstan) at 20:32 (14:32 universal time). Ten minutes later, the spacecraft jettisoned the third stage of its Soyuz launcher.

On 3 July, the three men of the fourth French-Russian mission, Altair, will reach the Mir station. There, they will meet Gennadi Manakov and Alexander Polechtchouk, who have been in space since last January.

After performing 10 or so biomedical and technological experiments, Haignere will return to earth on 22 July.

together with Manakov and Polechtchouk, while Haignere's fellow passengers on the up-voyage will man the station until the end of 1993.

Most of the Altair experiments—named after a star in the Eagle constellation which appears above Baikonur on summer evenings—continue the program designed for Antares. They involve essentially the adaptation of man's cardiovascular and neurological systems to conditions in space. The technological part of the program provides in particular for experiments on materials and on the influence of cosmic particles on electronic components, which might account for certain major failures of satellites on orbit.

However, although the Altair experiments stress continuity, the overall mood surrounding this flight is no longer what it was last year. The international economic crisis has led to downward revisions in all large space program budgets. The space ministers have "frozen" until 1995 the Hermes European spacecraft, for which Michel Tognini fought so vehemently in his conversation from Mir with President Mitterrand.

At the recent Le Bourget Aerospace Show, Mr. Jean-Marie Luton, the ESA [European Space Agency] general director, admitted that this beacon-project might turn into a mere capsule. Faced with an increasingly reluctant Congress, the advocates of the U.S. Freedom space station project managed to save it only at the last minute, in a reduced version, thanks to President Clinton's eventually favorable decision.

More than ever, the time has come for pragmatism. When attempting to preserve as many major space goals as possible, Russia, whose technologies were seen as obsolete not so long ago, because they are so simple, finds itself in the forefront. "Available technologies, even rustic, can suffice if they promise optimum cost efficiency," the French minister of higher education and research, Mr. Francois Fillon, pointed out recently to CNES officials. "After all, NASA sent the first man on the moon with rudimentary resources, compared to what we have today. Let's continue to use Mir for new flights, even if it means modifying it for joint programs."

As soon as he is back to earth, Jean-Pierre Haignere intends to give his full support to this policy. "We must now do more than just help the Russians safeguard their potential. We must develop joint projects to ensure that the Europeans are present in space," commented the cosmonaut, who would like to become the European space industry's "ambassador" to Moscow.

Despite the huge problems facing Russia and the other members of the former USSR, activities on board Mir are not only assured to continue until at least 1993, but they will also include several remarkable events. Toward the end of the year, the station will receive a physician, probably Valery Poliakov, who will remain there a record 16 months; then, in September 1994, Elena Kondakova, the first woman selected for a long-duration flight (six months).

Two ESA astronaut flights are being negotiated: the first one would last 30 days, at the end of 1994; the second, 135 days, starting in August 1995. Between the two, from March to May 1995, a U.S. physician astronaut will have his turn.

When his mission is completed, he will be picked up by the Atlantis shuttle, which will dock to the Russian station; this will be a major U.S.-Russian event, the first one since the historical Apollo-Soyuz flight of July 1975.

In 1996, the first French woman astronaut, Claudie Andre-Deshays (Jean-Pierre Haignere's stand-in) will be on her way to space. Two additional French-Russian flights are already planned for 1998 and 2000.

#### ESA Approves Nuclear Safety Aid to Eastern Europe *93WS0616D Paris AFP SCIENCES in French 1 Jul 93 p 23*

[Unattributed article: "EEC Agrees to Improve Nuclear Safety in East Europe"]

[Text] Luxembourg—On 25 June, the energy ministers of the 12 member countries reaffirmed their commitment to help improve safety at eastern European nuclear power plants.

To this end, they appealed to the European Commission to implement as soon as possible the measures decided under the PHARE [Poland-Hungary: Assistance to Restructure the Economy] and TACIS [Technical Assistance to the Commonwealth of Independent States and Georgia] programs. These two programs, which were allocated a total budget of ECU330 million (2.18 million French francs [Fr]) from 1990 and 1993, include studies on the improvement of nuclear power plant safety, and others on ways to start operating these plants again profitably and safely. They also include training management personnel on location, and sending western experts to assist them.

The European commissioner in charge of energy, Mr. Abel Matutes, recalled the considerable effort already made by the EEC in this respect. With the ECU330 million already committed, the EEC contributed 60 percent of the total \$700-million budget recommended at the summit meeting of the seven most highly industrialized countries (the G-7), last July in Munich, to meet the urgent needs of eastern European countries for nuclear safety.

The commissioner mentioned the example of the Bulgarian Kozlodui power plant. The EEC provided ECU26 million to finance the modernization of units 1 and 2 of this power plant, which is said to be especially dangerous. "The Community will continue its program in Bulgaria jointly with other western countries, for units 3 and 4." The commissioner, however, pointed out the problems encountered in most eastern European countries as a result of the disorganization of the state

apparatus. "Sometimes, it is hard to find who is really in charge of the power plants"; this does not make cooperation and technical assistance any easier.

The ministers also stressed the need to promote the use of other energy sources in eastern European countries, as long as they provide adequate safety and environmental protection.

### **Hispano-Suiza Contracts With Russian Aircraft Engine Maker**

BR1708110993 Paris LA LETTRE DU GIFAS  
in English 1 Jul 93 p 2

[Unattributed article: "Equipment"]

[Text]

### **Hispano-Suiza: Cooperation With the Russian Motorist Trud for High Power**

During the Paris Air Show, Hispano-Suiza and the Russian motorist Trud signed a contract covering a preliminary study on a 30,000 hp reduction gear for turbofans. Hispano-Suiza is involved in the development of high power reduction gear under a technology development program handled jointly by Hispano-Suiza and SNECMA [(French) National Company for Aircraft Engine Studies and Construction] in conjunction with high bypass ratio engines. Trud, of Samara, is managed by the manufacturer Kuznetsov, known for such developments as NK12 turboprops, NK8, NK86 and NK321 turbojets and for designing the NK93 engine with faired blowers driven by the most powerful counter-rotational aircraft engine reduction gear in existence.

Hispano-Suiza 1 Jul 1993—Contact: Mrs. LACOUR-LIE—Phone: (33)47-60.52.74

### **Bull Forms Software Engineering Group**

93WS0618B Paris PRODUCTIQUE/AFFAIRS  
in French 5 Jul 93 p 7

[Text] Computer manufacturer Bull and four software houses—Cap Gemini Sogeti, Sema group, Steria, and Cisi (CEA-Industrie group)—plan to work together more closely on software engineering. The four service firms are already partners in the French Software Engineering Company (SFGL), and are going to bring their products in line with Bull's. The team effort will give SGFL, which has concentrated primarily on technical software engineering, an opportunity to expand into the engineering of management programs. The world market for software engineering is estimated at about \$1.5 billion (8.1 billion French francs), and the partners aim to capture \$100 million of that. The consortium also seeks to act as a counterweight to the recent alliance between IBM and CGI.

### **French Astronaut on Board Russia's Mir**

93WS0619A Paris AFP SCIENCES in French 8 Jul 93  
pp 5-9

[Text] Kaliningrad—French cosmonaut Jean-Pierre Haignere and his Russian companions for the Altair mission, Vassili Tsibliev and Alexandre Serebrov, reached Russia's Mir space station<sup>1</sup> at 389 km above Asia Minor on 3 July, 5:45 p.m.

The many French and Russian space officials that had come to witness the event on the screens of the Flight Control Center (TSOUP) in Kaliningrad, near Moscow, saw a radiant Jean-Pierre step out of the lock chamber connecting the Soyuz-TM 17 and the Mir.

Jean-Pierre good-naturedly called out "Hello, everyone!" in Russian, then handed a bouquet of dried flowers to station commander Gennadi Manokov, who has been working on Mir since last January with ship engineer Alexandre Polechtchouk. Haignere then launched a logo for the Altair mission he will carry out for the French Space Agency (CNES) into the station's weightless atmosphere.

Two days after his departure from the Kazakh cosmodrome of Baikonour, Jean-Pierre Haignere was rejoining some old friends. The Mir commander and ship engineer were, in fact, the same men he had trained with as Michel Tognini's understudy for the Franco-Russian Antares flight in 1992.

Moreover, Manokov and Polechtchouk will return to earth with him next 22 July, and the Russians who traveled with Haignere to the station will become the Mir's new chief crew for the next six months.

The following day Jean-Pierre Haignere appeared on the TSOUP screens in top form. In answer to the questions of a few French journalists come to get his initial impressions via the first "telebridge" between Mir and the ground, he stressed that his flight was "a testament to the quality of Russian technology."

Haignere nonetheless took the opportunity to remark that, in his view, it would still be in Europe's interest to try to develop its own manned space ships, and that France should be the "engine" for implementing such a policy. "However, the cost of manned flights should not become prohibitive," added the cosmonaut, alluding to the proposed Hermes space plane that was "frozen" in November by Europe's space ministers. If resuscitated, the shuttle is likely to take the form of a simple, wingless capsule.

Russia's impressive space complex consists of seven elements. Besides the station itself, there is the Kvant astrophysics lab, the Kvant-2 module that houses an array of scientific and technical equipment, an exit lock chamber and a shower, and the Kristall module, which is dedicated primarily to technological and biological experiments and earth observation.



Kristall is specially equipped with a universal docking device, which was initially designed for the Bourane space plane. The new junction system was tested for the first time last January by Manakov and Polechtchouk, whose Soyuz-TM-16 with its universal lock chamber docked at that end of the station. It is aboard the Soyuz-TM-16 that the Haignere-Manakov-Polechtchouk "troika" will return to earth. The transport ship was built several years ago for docking on Bourane, but the financial problems of the Russian cosmonaut program made it impossible to follow through.

The Russian shuttle flew only once on automatic pilot, in November 1988. Those who believe it has any real chance of resuming its flights are increasingly scarce, despite the fact that the project's technical staff said again just a few days ago in Baikonour that Bourane might repeat its exploit near the end of next year.

Actually, it will be the American shuttle Atlantis that will dock there in May, 1995, to pick up an American astronaut at the end of his mission aboard the Russian orbital complex. The mission will be the first joint space project set up by the two "big space nations" since the 1975 Apollo-Soyuz flight.

Finally, Mir includes the newcomers' Soyuz-TM-17, which takes the place of the Progress-M-18 and Progress-TM-17. The TM-18 separated from the station 20 minutes after the Altair crew docked (an operation that was filmed for the first time by Jean-Pierre Haignere and his fellow crewmen).

After a first meal aboard the station and a long-awaited, more comfortable night, the cosmonauts set to work installing experimental equipment, getting initial experiments underway, and rehearsing emergency evacuation procedures.

For the first time, researchers on the ground (in this case, Toulouse) will be able to intervene directly in an experiment underway on Mir, through an audio-video link that is itself experimental.

#### **Boxed Material: Experiments of the Franco-Russian Altair Mission**

Jean-Pierre Haignere will conduct 10 scientific experiments during his three weeks aboard the Mir station.

For the most part, the experiments are a continuation of the program designed for the Antares project in 1992. Most of the instruments have been in space since then, and have been used by the Russian crews that have relayed one another since Michel Tognini left last August.

The aim of the new biomedical experiment, Synergies, is to study the vestibular system's role in controlling balance and the way human beings orient themselves when making complex movements under weightless conditions.

The other life science experiments are:

- Orthostatism (study of the effects of weightlessness on the cardiovascular system);
- Vinimal (study of the same effects on the transformation of mental images);
- Illusions (study of the nervous mechanisms that adapt sensory-motor functions to space conditions);
- Immunology (how the immune system adapts);
- Biodose (study of the biological effects of cosmic radiation, to determine the risks to cosmonauts).

The science program also includes a continuation of the Alice experiment on fluids and materials. Alice investigates the hydrodynamic and thermal behavior of different fluids near "critical point" (the point at which two homogenous phases of a fluid, vapor and liquid, become indiscernible) in weightlessness.

The Exeq experiment, which looks at the effect of heavy cosmic ions on electronic components, is of particular interest to satellite operators. Indeed, cosmic ion flows are suspected of causing the failure of many orbiting crafts' electronic systems. The "Exeq" instrument, which has been operating in space since July, 1992, will be disconnected and brought back to earth.

The Microaccelerometer experiment aims to map microgravity throughout the space complex with great precision.

Finally, Teleassistance will try to qualify an experimental mode involving a remote ground researcher who is connected to the station via an audio/video link while an experiment (Orthostatism) is being performed.

#### **Boxed Material: Jean-Pierre Haignere and the French Prime Minister Talk**

On 7 July, the French cosmonaut talked with Prime Minister Edouard Balladur, who "congratulated him and thanked him on behalf of the entire French people" for his exploit and expressed his "confidence" in Franco-Russian space collaboration.

"I was a little scared at first, but I actually felt in excellent shape from the first few hours. We are working a lot and efficiently, and are getting along very well," said Jean-Pierre Haignere during the 20-minute conversation between Hotel Matignon and the Mir station. The station overflowed the better part of the planet—from Patagonia to Russia—during its course.

After his talk with France's fourth cosmonaut, Balladur said he was convinced that Europe should "set its sights high" in space.

"European countries should devote all their energies to achieving this together," continued the prime minister. "What we are doing with the Russians and the Americans, we should be able to do with the Germans or English. It's a matter of political will. (...) Whether we



travel in space will depend on how many resources we can devote to it, but if we really want to, it should not take too long."

#### Footnotes

1. See AFP SCIENCES No 880, 1 July 1993, p 7.

#### Poland Inaugurates EUTELSAT Ground Station

93WS0619B Paris AFP SCIENCES in French 8 Jul 93  
p 14

[Text] Paris—The European Satellite Telecommunications Organization (EUTELSAT) has just announced Poland's entry into the era of digital telecommunications with its inauguration 7 July of the EUTELSAT satellite-reception earth station. The station is installed in Psary, 200 km south of Warsaw, and will support the use of six channels dedicated to Polish telecommunications on the EUTELSAT-II-F5 satellite.

Poland's station is the 19th EUTELSAT station of its kind to use time division multiple access (TDMA), and the second to be installed in an eastern European country (the first was in Romania). The station will initially support the simultaneous transmission of 600 telephone lines—a number that will later jump to 2,000—between Poland, the Benelux countries, France, Germany, Italy, Norway, Spain, and the United Kingdom.

Installation of the Psary station, which was built by Satellite Transmission Systems of Long Island, USA, was financed through a loan from the World Bank.

Poland is expected to inaugurate its central station for company communications (VSAT technology), which supports the use of small antennas, by the end of the month. It is being built in Poreby Lesne, 50 km north of Warsaw, and can connect 2,000 lines simultaneously.

#### France, Russia Sign Nuclear Safety Accord

93WS0619C Paris AFP SCIENCES in French 8 Jul 93  
pp 21, 22

[Text] Moscow—France and Russia signed an agreement 28 June to jointly study the consequences of nuclear accidents and share their experiences in managing the aftermath of accidents.

The agreement was signed in Moscow between prefect Claude Guizard, the general secretary of the Nuclear Safety Interministry Committee (CISN), and Vassili Vozniak, the president of the Russian State Committee on the consequences of Chernobyl. It calls for information exchanges and joint studies and research, a member of the French delegation said.

Initially, the primary areas for collaboration will concern management of the aftermath of accidents, the creation of a databank on the consequences of radiological disasters, and methods for dosimetric monitoring and decisionmaking assistance. CISN representatives also had an

opportunity to talk with the Russian atomic energy minister Viktor Mikhailov and Health Ministry officials while in Moscow.

The signing of the Franco-Russian agreement coincides with several missions in the Ukraine and Russia over the last few weeks, carried out by nuclear safety experts sent at the initiative of the European Commission to help improve the safety of civilian plants in those two states.

#### EC Nuclear Safety Teams in Russia, Ukraine

93WS0619D Paris AFP SCIENCES in French 8 Jul 93  
pp 22

[Text] Tokyo—European Commission vice-president Sir Leon Brittan announced 8 July that the EC had dispatched eight permanent teams to technically assist civilian nuclear sites in the former USSR over the last several weeks. Six of the plants are in Russia and two are in the Ukraine. The EC, stressed Sir Leon during a press briefing at the G-7 summit in Tokyo, "is doing its part to provide assistance to Russia."

A high-ranking official in the American government announced in Tokyo that the United States would spend \$100 million on nuclear safety. "We want to work in each of Russia's 23 nuclear plants," he asserted.

The EC's six Russian teams were sent to Smolensk, Sosnovy Bor, Kola, Kalinine, Balakovo, and Beloyarsk, says a Commission document. The two Ukrainian teams are in Rovno and the south of the country. The teams will be responsible for maintaining installations, detecting leaks, and inspection work. The total budget for the program comes to ECU32 million.

The permanent teams began their missions between late June and early July. The nuclear plants they will be working on feature RBMK (like those of Chernobyl) and VVER 440/230 (water-pressurized) reactors.

All of them are deemed "unsafe." A Commission document explains that it is difficult to imagine simply shutting down the different plants, because nuclear energy plays a major role in those countries' production of electricity. Closing down the most dangerous reactors for a few years, the Commission believes, is possible, provided a substitute source of energy can be found. That means coming up with substantial amounts of money to pay for the installation of thermal plants, completing the already-started construction of modern nuclear plants, and modernizing existing reactors.

The EC's help in this area is part of its aid package to Russia and the republics of the former USSR. Western nuclear-safety aid to the former USSR began after the Munich summit. The EC is far and away the biggest contributor of such aid, and provided assistance totaling ECU332 million between 1991 and 1993.

### ESA, Russia Sign Joint Mission Agreement

93WS0625B Paris AFP SCIENCES in French 15 Jul 93  
p 7

[Text] Paris—The director of the ESA's space station and microgravity program and the general director of NPO-Energiya, the company that handles Russia's manned flights, have just signed an agreement on Mir flights for ESA cosmonauts in 1994 and 1995, the ESA said 8 July. The contractual agreement reached by Yuri Semenov and Fredrik Engstrom "is the first concrete step taken in the budding collaboration between the ESA and Russia on manned space flight," stressed the Agency.

Four ESA astronauts were selected last May. Pedro Duque, a 30-year-old Spaniard, and Ulf Merbold, a 51-year-old German, were chosen for the 30-day ESA-Mir mission in September 1994. Christer Fuglesang, a 36-year-old Swede, and Thomas Reiter, a 35-year-old German, were selected for the 135-day flight in August of 1995. The four men will leave to undergo specific training in the City of Stars.

The ECU45 million contract covers training of the astronauts, all flight preparation work, the integration of equipment and on-board experiments, and monitoring and post-flight processing of data.

### Siemens To Set Up Telecommunications Networks in CIS

M11808131993 Bonn DIE WELT in German 21 Jul 93  
p 15

[Text] The Munich-based company Siemens is expanding its activities in the CIS countries. Although its medical technology and power generation/KWU [Power Plants Union] divisions have long been active there, its public communications networks (OEN) division has benefited only gradually from the restructuring and development of the former Soviet republics' infrastructures.

To describe the present dilemma, a Siemens spokesman points out that "Russia presently has 77 provincial authorities able to give approval for local telephone networks." This makes it difficult to sign contracts. Siemens has so far brought its CIS business together under three joint ventures, two in Russia and one in the Ukraine.

Both Russian joint ventures, in each of which the Russian partner has a majority stake, were initially designed for the marketing and servicing of switching and communications systems for telephones, although manufacture will soon follow, according to Siemens. Present contracts in Russia are estimated at 140 million German marks [DM].

The OEN Division, whose DM13.2-billion turnover in 1991/92 makes it Siemens's most important sector, has been involved in developing an international telephone exchange in the Ukrainian capital, Kiev. This joint

venture also covers the marketing, servicing, and manufacture of switching systems, and has so far received orders "worth billions of German marks." As a supplier of relay systems, Siemens is competing in the Ukraine with such international rivals as Alcatel and AT&T.

Regarding the active competition it faces in the CIS, Siemens points to the very secure financial basis of its business there: "The bulk of our contracts are guaranteed by prefinancing, Hermes credits, or barter deals." Siemens hopes to gain a footing in Georgia in the near future, having signed a preliminary contract a few weeks ago to supply relay and communications systems, and telephone cables.

### German Telekom To Set Up Fiber Optic Network in Russia

BR0109085093 Eschborn NACHRICHTEN FUER  
AUSSENHANDEL in German 23 Jul 93 p 1

[Text] The German Federal Post Office's Telekom and Russian telecommunications company Intertelekom have signed a declaration of intent over joint development of a public digital telephone overlay network for the Russian Federation, to improve the country's internal and external communications potential. The project will use 50,000 kilometers of fiber optics to link 50 cities, and have over 50 toll exchanges. This will require investment of around \$1 billion over the next decade, which will also involve additional western partners.

### Franco-Russian Altair Mission Ends Successfully

93WS0654A Paris AFP SCIENCES in French 22 Jul 93  
pp 3, 4

[Article: "Total Success of Altair, Fourth Franco-Russian Space Mission"]

[Text] Paris—Just like the previous Franco-Russian space mission, Antares, one year ago, Altair, the fourth such mission, was crowned with total success on 22 July.

Dangling from its giant parachute (35 meters in diameter) that opened four minutes earlier, the Soyuz TM-16 space vessel capsule, with French cosmonaut Jean-Pierre Haignere and his Russian colleagues Gennadi Manakov and Alexander Polechtchuk on board, landed at 06 hours 40 minutes and 20 seconds Universal Time [UT] in the Kazakh steppe, 145 km from the mining town of Djezkazgan, or approximately 300 m east of Baikonur. The Kaliningrad (near Moscow) Flight Control Center [TSOUP] had announced the return for 0641 hours UT, about 160 km from Djezkazgan. So it would have been hard to do better.

The mission began on 1 July with the launching of a Soyuz rocket from Baikonur cosmodrome carrying the Soyuz TM-17 containing Vassily Tsibliev and Alexander Serebrov in addition to Jean-Pierre Haignere. Those two Russian cosmonauts remained aboard the Mir, relieving

Manakov and Polechtchuk, who had been staying there since the previous January. Manakov and Polechtchuk are supposed to return to earth on 27 November aboard the Soyuz TM-17 vessel which, remaining docked to the station, can be used by them as an emergency vehicle.

Altair allowed Jean-Pierre Haignere and his crewmates to perform about 10 experiments on the adaptation of the human body's cardiovascular and neurological systems to conditions in space, and other experiments having a technological focus (on materials and the impact of cosmic particles on electronic components, capable of explaining some serious satellite malfunctions).

With the notable of Synergies, aimed at studying the role of the vestibular nerve in controlling a sense of balance in space, most of the experiments were a continuation of the program designed for the Antares mission. The instruments had been in space since July, 1992, and were used by the rotating Russian crews aboard the Mir after the departure of French cosmonaut Michel Tognini last August.

"It all went remarkably well," for Lionel Suchet, head of the National Space Studies Center [CNES] project who supervised the progress of the mission from TSOU. "There was no equipment malfunction." One of the experiments, the micro-accelerometer, whose objective was to establish a high precision mapping of microgravity throughout the space complex, even underwent many more measurements than projected. In other words, the program was more than 100 percent accomplished.

Exeq, another experiment, designed to study the impact of heavy ions on electronic components will be extended another six months. It has been ongoing aboard Mir since the departure of Michel Tognini in July 1992.

Despite the enormous problems confronting the countries of the former USSR, space activities, jointly and on board Mir in particular, are therefore proceeding with perfect regularity and precision. Continuation of the activities aboard the orbital complex is guaranteed until 1996. In November, Mir will get a physician, probably Valery Poliakov, for a record stay of 16 months, and then in September 1994, Elena Kondakova, the first woman, is supposed to undergo a six-month flight.

The European Space Agency [ESA] is presently negotiating with the Russians for two joint missions: the first (lasting 30 days) for the end of 1994, and the second (lasting 135 days) to begin in August 1995.

In 1996, it will be the turn of the first French female cosmonaut, Dr. Claudie Andre-Deshays, Jean-Pierre Haignere's stand-in for the Altair mission, to head into space. Two other Franco-Russian flights aboard the Mir will follow in 1998 and 2000.

Jean-Pierre Haignere returned to Moscow during the day, accompanied by Manakov and Polechtchuk. He is the fourth Frenchman to spend time in space after Jean-Loup Chretien (two flights with the Russians in 1982 and 1988), Patrick Baudry (one flight in 1985, with the Americans), Michel Tognini (one flight with the Russians, last year). Haignere's return to Paris is set for 3 August.

### EUTELSAT To Increase CIS Coverage

93WS0654B Paris AFP SCIENCES in French 22 Jul 93 p 10

[Article: "Three EUTELSAT Satellites to Facilitate Communications With Former USSR"]

[Text] Paris—Beginning next January, three European Satellite Telecommunications Organization [EUTELSAT] satellites will be more especially allocated to western European communications with the former USSR according to the decision announced on 19 July of shifting the EUTELSAT-I-F1 satellite eastward.

The latter is presently positioned at 25.5 degrees east longitude and is now providing coverage of Russia. Its future geostationary orbital position (at an altitude of 36,000 km) will augment its telecommunications capabilities aimed towards the other CIS republics, as far as Kazakhstan, Uzbekistan and Turkmenistan.

EUTELSAT-I-F1 is the European organization's first generation satellite and does not enjoy the technical improvements especially for the former USSR that equip EUTELSAT-II-F4 that has been in orbit for a year and the improvements also made on the EUTELSAT-II-F5 scheduled for launching, also by an Ariane rocket, next January.

Besides telephone services, the EUTELSAT satellites provide business communications and data transmissions. Poor telephone connections with the western world are known to be one of the most glaring obstacles to the economic development of the former USSR.

As an organization that represents the public and private telecommunications services of 36 European countries, EUTELSAT has established participation in their improvement on behalf of Europe as one of its strategic objectives.

## EUROPE-ASIA RELATIONS

### Ericsson Signs Cellular Contracts With 12 PRC Provinces

BR1708103393 London *MOBILE COMMUNICATIONS INTERNATIONAL* in English Summer 93 p 7

[Unattributed article: "Late News"]

[Text]

#### Ericsson in China

Ericsson has signed an SEK100 [Swedish kronor] million contract for a TACS [total access communications system] cellular network in Hubei, a province in the interior of Southeast China. The deal is with PTMTC Communications Corp. Ltd, a joint venture company established in Hubei between the Posts and Telecommunications Administration Bureau of Hubei and MTC Electronic Technologies Co. Ltd of Canada.

The Swedish company now has cellular contracts with 12 of China's 27 provinces and claims to have captured 65

percent of the Chinese market for mobile systems. "We have been in China for 101 years," commented Lars Ramqvist, President and CEO [chief executive officer] of LM Ericsson, "and now it is finally paying off." Ericsson's internal plans call for the company to achieve 25 percent of its business from the Asia-Pacific region within the next three years.

Ericsson has also announced two deals designed to increase its penetration of the Chinese paging market. The company has signed a contract with Poly Technologies Inc. for the supply of a wide area paging system for Henan province. The first phase will begin operation in June, 1993, eventually the network will cover 17 cities and offer service to 100,000 customers. The system will use POCSAG [Post Office Code Standardization Advisory Group] technology and will offer automatic and operator assisted paging and voice messaging.

Ericsson has appointed Star Paging Communications of Hong Kong as its authorized dealer for the COMPACT 9000 paging transmitter in China. The first order from Star is for 150 transmitters to be installed in its own Hong Kong network.



**END OF**

**FICHE**

**DATE FILMED**

23 SEPT 1993